FAIRMONT ELECTRONICS
(PTY) LTD.

CABLES FAIRTRONICS CRAIGHALL TELEX 8-3227 SA.
P.O.BOX 41102, CRAIGHALL 2024.

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464 Ellis Street, Mountain View, California 94042

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Manufactured under one of the following U.S. Patents: 2981877, 3015048, 3064167, 3108359, 3117260; other patents pending.

INTRODUCTION

This full line condensed catalog is quick reference source on all Fairchild semiconductor products. It contains three basic types of information — numerical product listing, short-form data and general reference material — organized into the following sections:

Section 1 - Product Index

Numerical index listing device types, general product category, and the catalog page and line item number were the actual short-form data can be found.

Due to the complexity and variety of device numbering systems now used in the semiconductor industry, the product index is organized in a numeric-alpha sequence. Device order is dependent first on the numeric value of the first digit on the left, then on the value of the second digit, then the third et cetera, regardless of the total numeric value of the device number. For example, device number 10000 will preced device number 900. Device number 54107 will follow 5410 and preced device number 5411. Device numbers containing a letter of the alphabet are placed after devices containing no alpha character. For example, the 74H series of device numbers follows the last 7400 series number, 7497.

Sections 2 through 11 — Selection Guides

Diodes, Transistors, Optoelectronics, Charge-Coupled Devices, Hybrids, Linear, Interface, Digital, Memories, Microcomputers are organized into functional selection guides for easy reference. More complete product data is available from Fairchild in data books, application handbooks or notes, and individual data sheets.

Section 12 — Aerospace and Defense Lists currently qualified Jan QPL products.

Section 13 - Logic/Connection Diagrams

Logic and/or connection diagrams organized by product types in the order shown in the Table of Contents.

Section 14 — Ordering Information and Package Outlines

Section 15 - Sales Offices, Representatives and Distributors

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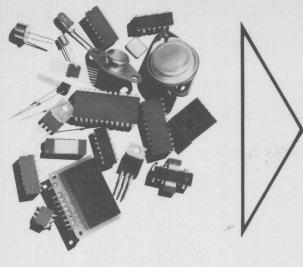
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| 30003BAB | Aerospace & Defense | 12-11/23 | 30701CFB | Aerospace & Defense | 12-13/4 |
| 30003BAC | Aerospace & Defense | 12-11/24 | 30702BEB | Aerospace & Defense | 12-13/5 |
| 30003CAB | Aerospace & Defense | 12-11/25 | 30702CEB | Aerospace & Defense | 12-13/6 |
| 30003CAC | Aerospace & Defense | 12-11/26 | 31001BAB | Aerospace & Defense | 12-13/8 |
| 30005BAB | Aerospace & Defense | 12-11/27 | 31001BAC | Aerospace & Defense | 12-13/9 |
| 30005BAC | Aerospace & Defense | 12-11/28 | 31001BCB | Aerospace & Defense | 12-13/7 |
| 30005CAB | Aerospace & Defense | 12-11/29 | 31001CAB | Aerospace & Defense | 12-13/1 |
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| 30007BAC | Aerospace & Defense | 12-11/32 | 31003BAB | Aerospace & Defense | 12-13/1 |
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| 30007CAC | | 12-12/2 | 31003CAB | Aerospace & Defense | 12-13/1 |
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| 30009CAB | Aerospace & Defense | 12-12/5 | 31004BAC | Aerospace & Defense | 12-13/1 |
| 30009CAC | Aerospace & Defense | 12-12/6 | \$180 B | DOSESHIED | 7307647 |
| 30103BEB | Aerospace & Defense | 12-12/7 | 31004BCB | Aerospace & Defense | 12-13/1 |
| 30103CEB | Aerospace & Defense | 12-12/8 | 31004CAB | Aerospace & Defense | 12-13/2 |
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| 30105CEB | Aerospace & Defense | 12-12/10 | 3257ADC | Memories | 10-8/1 |
| 30106BEB | Aerospace & Defense | 12-12/11 | 2257700 | Momentee | 10.044 |
| 30106CEB | Aerospace & Defense | 12-12/12 | 3257XDC | Memories | 10-8/1 |
| 30109BEB | Aerospace & Defense | 12-12/13 | 32581DC | Memories | 10-8/2 |
| | | | 32582DC | Memories | 10-8/2 |
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| 3260XDC | Memories | 10-8/3 | 40014BFMQB | Digital, CMOS | 9-28/2 |
| 3262ADC | Digital, MOS | 9-35/1 | 40014BPC | Digital, CMOS | 9-28/2 |
| 3262BDC | Digital, MOS | 9-35/2 | 4001BDC | Digital, CMOS | 9-28/1 |
| 3341ADC | | 10-9/4 | 4001BDM | Digital, CMOS | 9-28/1 |
| 3341APC | Memories | 10-9/4 | 4001BDMQB | Digital, CMOS | 9-28/1 |
| 3341DC | Memories | 10-9/3 | 4001BFC | Digital, CMOS | 9-28/1 |
| | Memories | 10-9/3 | 4001BFM | Digital, CMOS | 9-28/1 |
| 3341DM | | 10-9/3 | 4001BFMQB | Digital, CMOS | 9-28/1 |
| | Memories | 10-9/3 | 4001BPC | Digital, CMOS | 9-28/1 |
| 3342DC | Memories | 10-9/5 | 4002BDC | Digital, CMOS | 9-28/3 |
| 3342PC | Memories | 10-9/5 | 4002BDM | Digital, CMOS | 9-28/3 |
| 3347DC | | 10-9/6 | 4002BDMQB | Digital, CMOS | 9-28/3 |
| | Memories | 10-9/6 | 4002BFC | Digital, CMOS | 9-28/3 |
| | Memories | 10-9/1 | 4002BFM | Digital, CMOS | 9-28/3 |
| 3349DC | Memories | 10-9/2 | 4002BFMQB | Digital, CMOS | 9-28/3 |
| 3349PC | Memories | 10-9/2 | 4002BPC | Digital, CMOS | 9-28/3 |
| | Memories | 10-9/9 | 4006BDC | Digital, CMOS | 9-30/7 |
| | Memories | 10-9/7 | 4006BDM | Digital, CMOS | 9-30/7 |
| | Memories | 10-9/8 | 4006BDMQB | Digital, CMOS | 9-30/7 |
| 35141DC | Memories | 10-8/4 | 4006BFC | Digital, CMOS | 9-30/7 |
| 35142DC | Memories | 10-8/5 | 4006BFM | Digital, CMOS | 9-30/7 |
| 35151DC | | 10-8/6 | 4006BFMQB | Digital, CMOS | 9-30/7 |
| 35152DC | Memories | 10-8/7 | 4006BPC | Digital, CMOS | 9-30/7 |
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| 35392DC | Memories | 10-5/16 | 4007UBDM | Digital, CMOS | 9-28/2 |
| 3542ADC | Memories | 10-5/14 | 4007UBDMQB | Digital, CMOS | 9-28/2 |
| 3542DC | Memories | 10-5/13 | 4007UBFC | Digital, CMOS | 9-28/2 |
| 35512DC | Memories | 10-9/10 | 4007UBFM | Digital, CMOS | 9-28/2 |
| 35512DL | Memories | 10-9/10 | 4007UBFMQB | Digital, CMOS | 9-28/2 |
| 35512DM | Memories | 10-9/10 | 4007UBPC | Digital, CMOS | 9-28/2 |
| 3708DC | Digital, MOS | 9-35/3 | 40085BDC | Digital, CMOS | 9-34/4 |
| 3708DL | Digital, MOS | 9-35/3 | 40085BDM | Digital, CMOS | 9-34/4 |
| 3708DM | Digital, MOS | 9-35/3 | 40085BDMQB | Digital, CMOS | 9-34/4 |
| 3708FC | Digital, MOS | 9-35/3 | 40085BFC | Digital, CMOS | 9-34/4 |
| 3708FM | Digital, MOS | 9-35/3 | 40085BFM | Digital, CMOS | 9-34/4 |
| 3708PC | Digital, MOS | 9-35/3 | 40085BFMQB | Digital, CMOS | 9-34/4 |
| 3814DC | Digital, MOS | 9-35/4 | 40085BPC | Digital, CMOS | 9-34/4 |
| 3815DC | Digital, MOS | 9-35/5 | 4008BDC | | 9-34/1 |
| 3816DC | Digital, MOS | 9-35/6 | 4008BDM | Digital, CMOS | 9-34/ |
| 3816PC | Digital, MOS | 9-35/6 | 4008BDMQB | Digital, CMOS | 9-34/1 |
| 40014BDC | Digital, CMOS | 9-28/25 | 4008BFC | Digital, CMOS | 9-34/1 |
| 40014BDM | Digital, CMOS | 9-28/25 | 4008BFM | Digital, CMOS | 9-34/1 |
| 40014BDMQB | Digital, CMOS | 9-28/25 | 4008BFMQB | Digital, CMOS | 9-34/1 |
| 40014BFC | Digital, CMOS | 9-28/25 | 4008BPC | Digital, CMOS | 9-34/1 |
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| 40097BDMQB | Digital, CMOS | 9-28/15 | 4015BFMQB | Digital, CMOS | 9-30/4 |
| 40097BFC | Digital, CMOS | 9-28/15 | 4015BPC | Digital, CMOS | 9-30/4 |
| 40097BFM | Digital, CMOS | 9-28/15 | 40160BDC | Digital, CMOS | 9-31/5 |
| 40097BFMQB | Digital, CMOS | 9-28/15 | 40160BDM | Digital, CMOS | 9-31/5 |
| 40097BPC | Digital, CMOS | 9-28/15 | 40160BDMQB | Digital, CMOS | 9-31/ |
| 40097BPC | Digital, CMOS | 9-28/14 | 40160BFC | Digital, CMOS | 9-31/ |
| 40098BDM | Digital, CMOS | 9-28/14 | 40160BFM | Digital, CMOS | 9-31/ |
| 40098BDMQB | Digital, CMOS | 9-28/14 | 40160BFMQB | Digital, CMOS | 9-31/ |
| 40000PF0 | | | 40160BPC | | 9-31/ |
| 40098BFC | Digital, CMOS | 9-28/14 | | Digital, CMOS | |
| 40098BFM | Digital, CMOS | 9-28/14 | 40161BDC | Digital, CMOS | 9-31/ |
| 40098BFMQB | Digital, CMOS | 9-28/14 | 40161BDM | Digital, CMOS | 9-31/ |
| 40098BPC | Digital, CMOS | 9-28/14 | 40161BDMQB | Digital, CMOS | 9-31/ |
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| 4011BDM | Digital, ECL | 9-27/17 | 40161BFM | Digital, CMOS | 9-31/ |
| 4011BDMQB | Digital, ECL | 9-27/17 | 40161BFMQB | Digital, CMOS | 9-31/ |
| 4011BFC | Digital, ECL | 9-27/17 | 40161BPC | Digital, CMOS | 9-31/ |
| 4011BFM | Digital, ECL | 9-27/17 | 40162BDC | Digital, CMOS | 9-31/ |
| 4011BFMQB | Digital, ECL | 9-27/17 | 40162BDM | Digital, CMOS | 9-31/ |
| 4011BPC | Digital, ECL | 9-27/17 | 40162BDMQB | Digital, CMOS | 9-31/ |
| 4012BDC | Digital, ECL | 9-27/19 | 40162BFC | Digital, CMOS | 9-31/ |
| 4012BDM | Digital, ECL | 9-27/19 | 40162BFM | Digital, CMOS | 9-31/ |
| 4012BDMQB | Digital, ECL | 9-27/19 | 40162BFMQB | Digital, CMOS | 9-31/ |
| 4012BFC | Digital, ECL | 9-27/19 | 40162BPC | Digital, CMOS | 9-31/ |
| 4012BFM | Digital, ECL | 9-27/19 | 40163BDC | Digital, CMOS | 9-31/ |
| 4012BFMQB | Digital, ECL | 9-27/19 | 40163BDM | Digital, CMOS | 9-31/ |
| 4012BPC | Digital, ECL | 9-27/19 | 40163BDMQB | Digital, CMOS | 9-31/ |
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| 4013BDM | Digital, CMOS | 9-29/2 | 40163BFM | Digital, CMOS | 9-31/ |
| 4013BDMQB | Digital, CMOS | 9-29/2 | 40163BFMQB | Digital, CMOS | 9-31/ |
| 4013BFC | Digital, CMOS | 9-29/2 | 40163BPC | Digital, CMOS | 9-31/ |
| 4013BFM | Digital, CMOS | 9-29/2 | 4016BDC | Interface | 8-16/ |
| 4013BFMQB | Digital, CMOS | 9-29/2 | | Digital, CMOS | 9-33/ |
| 4013BPC | Digital, CMOS | 9-29/2 | 4016BDM | Interface | 8-16/ |
| 4014BDC | Digital, CMOS | 9-30/5 | \$1 VIDE - 30 | Digital, CMOS | 9-33/ |
| 4014BDM | Digital, CMOS | 9-30/5 | 4016BDMQB | Interface | 0 16/ |
| 4014BDMQB | Digital, CMOS | 9-30/5 | 401000111100 | Digital, CMOS | 8-16/ 9-33/ |
| 4014BFC | Digital, CMOS | 9-30/5 | 4016BFC | Interface | 8-16/ |
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| 4014BFMQB | | | 4016BFM | SMO Jenero | |
| 4014BPC | Digital, CMOS | 9-30/5 | TO TOD! MI | Interface | 8-16/ |
| 4014BPC | Digital, CMOS | 9-30/5 | 4016BFMQB | Digital, CMOS | 9-33/ |
| 4015BDC 4015BDM | Digital, CMOS | 9-30/4 | 40 IODFMQB | Inferface | 8-16/ |
| 4015BDMQB | Digital, CMOS | 9-30/4 | 4016BPC | Digital, CMOS | 9-33/ |
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| 40174BDM | Digital, CMOS | 9-29/5 | 40194BFC | Digital, CMOS | 9-30/2 |
| 40174BDMQB | Digital, CMOS | 9-29/5 | 40194BFM | Digital, CMOS | 9-30/2 |
| 40174BFC | Digital, CMOS | 9-29/5 | 40194BFMQB | Digital, CMOS | 9-30/2 |
| 401746FC | Digital, CiviOS | 9-29/3 | 40194BPC | Digital, CMOS | 9-30/2 |
| 40174BFM | Digital, CMOS | 9-29/5 | 30.0000 | | |
| 40174BFMQB | Digital, CMOS | 9-29/5 | 40195BDC | Digital, CMOS | 9-30/3 |
| 40174BPC | Digital, CMOS | 9-29/5 | 40195BDM | Digital, CMOS | 9-30/3 |
| 40175BDC | Digital, CMOS | 9-29/3 | 40195BDMQB | Digital, CMOS | 9-30/3 |
| 40175BDM | Digital, CMOS | 9-29/3 | 40195BFC | Digital, CMOS | 9-30/3 |
| 40175BDMQB | Digital, CMOS | 9-29/3 | 40195BFM | Digital, CMOS | 9-30/3 |
| 40175BFC | Digital, CMOS | 9-29/3 | 40195BFMQB | Digital, CMOS | 9-30/3 |
| 40175BFM | Digital, CMOS | 9-29/3 | 40195BPC | Digital, CMOS | 9-30/3 |
| 40175BFMQB | Digital, CMOS | 9-29/3 | 4019BDC | Digital, CMOS | 9-29/ |
| 40175BPC | Digital, CMOS | 9-29/3 | 4019BDM | Digital, CMOS | 9-29/ |
| | | | 4019BDMQB | Digital, CMOS | 9-29/ |
| 4017BDC | Digital, CMOS | 9-32/9 | | end leaven. | |
| 4017BDM | Digital, CMOS | 9-32/9 | 4019BFC | Digital, CMOS | 9-29/ |
| 4017BDMQB | Digital, CMOS | 9-32/9 | 4019BFM | Digital, CMOS | 9-29/ |
| 4017BFC | Digital, CMOS | 9-32/9 | 4019BFMQB | Digital, CMOS | 9-29/ |
| 4017BFM | Digital, CMOS | 9-32/9 | 4019BPC | Digital, CMOS | 9-29/ |
| 4017BFMQB | Digital, CMOS | 9-32/9 | 4020BDC | Digital, CMOS | 9-32/7 |
| 4017BPC | Digital, CMOS | 9-32/9 | 4020BDM | Digital, CMOS | 9-32/7 |
| 4018BDC | Digital, CMOS | 9-32/10 | 4020BDMQB | Digital, CMOS | 9-32/7 |
| 4018BDM | Digital, CMOS | 9-32/10 | 4020BFC | Digital, CMOS | 9-32/7 |
| 4018BDMQB | Digital, CMOS | 9-32/10 | 4020BFM | Digital, CMOS | 9-32/7 |
| 1010000 | Di 11 1 01100 | 10 19 68 07 68 | 4020BFMQB | Digital, CMOS | 9-32/7 |
| 4018BFC | Digital, CMOS | 9-32/10 | 4000PD0 | Distal CMOS | 0.00/5 |
| 4018BFM | Digital, CMOS | 9-32/10 | 4020BPC | Digital, CMOS | 9-32/7 |
| 4018BFMQB | Digital, CMOS | 9-32/10 | 4021BDC 4021BDM | Digital, CMOS | 9-30/6 |
| 4018BPC 40192BDC | Digital, CMOS | 9-32/10 | 4021BDMQB | Digital, CMOS Digital, CMOS | 9-30/6 |
| 40192000 | Digital, CMOS | 9-31/13 | 4021BFC | Digital, CMOS | 9-30/6 |
| 40192BDM | Digital, CMOS | 9-31/13 | 4021010 | Digital, ONICO | 9 0070 |
| 40192BDMQB | Digital, CMOS | 9-31/13 | 4021BFM | Digital, CMOS | 9-30/6 |
| 40192BFC | Digital, CMOS | 9-31/13 | 4021BFMQB | Digital, CMOS | 9-30/6 |
| 40192BFM | Digital, CMOS | 9-31/13 | 4021BPC | Digital, CMOS | 9-30/6 |
| 40192BFMQB | Digital, CMOS | 9-31/13 | 4022BDC | Digital, CMOS | 9-32/8 |
| 40192BPC | Digital, CMOS | 9-31/13 | 4022BDM | Digital, CMOS | 9-32/8 |
| 40193BDC | Digital, CMOS | 9-31/13 | 4022BDMQB | Digital, CMOS | 9-32/8 |
| 40193BDM | Digital, CMOS | 9-32/1 | 4022BFC | Digital, CMOS | 9-32/8 |
| 40193BDMQB | Digital, CMOS | 9-32/1 | 4022BFM | Digital, CMOS | 9-32/8 |
| 40193BFC | Digital, CMOS | 9-32/1 | 4022BFMQB | Digital, CMOS | 9-32/8 |
| | | | 4022BPC | Digital, CMOS | 9-32/8 |
| 40193BFM | Digital, CMOS | 9-32/1 | | ONIA SERIESI | |
| 40193BFMQB | Digital, CMOS | 9-32/1 | 4023BDC | Digital, ECL | 9-27/1 |
| 40193BPC | Digital, CMOS | 9-32/1 | 4023BDM | Digital, ECL | 9-27/1 |
| 40194BDC | Digital, CMOS | 9-30/2 | 4023BDMQB | Digital, ECL | 9-27/1 |
| 40194BDM | Digital, CMOS | 9-30/2 | 4023BFC | Digital, ECL | 9-27/1 |
| | | | 4023BFM | Digital, ECL | 9-27/1 |

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| 1023BPC | Digital, ECL | 9-27/18 | 4030BDM | Digital, CMOS | 9-28/1 |
| 024BDC | Digital, CMOS | 9-32/5 | 4030BDMQB | Digital, CMOS | 9-28/1 |
| 1024BDM | Digital, CMOS | 9-32/5 | 4030BFC | Digital, CMOS | 9-28/1 |
| 024BDMQB | Digital, CMOS | 9-32/5 | 4030BFM | Digital, CMOS | 9-28/1 |
| 024BFC | Digital, CMOS | 9-32/5 | 4030BFMQB | Digital, CMOS | 9-28/1 |
| 024BFM | Digital, CMOS | 9-32/5 | 4030BPC | Digital, CMOS | 9-28/1 |
| 024BFMQB | Digital, CMOS | 9-32/5 | 4031BDC | Digital, CMOS | 9-30/9 |
| 024BPC | Digital, CMOS | 9-32/5 | 4031BDM | Digital, CMOS | 9-30/9 |
| 025BDC | Digital, CMOS | 9-28/2 | 4031BDMQB | Digital, CMOS | 9-30/9 |
| 025BDM | Digital, CMOS | 9-28/2 | 4031BFC | Digital, CMOS | 9-30/9 |
| 025BDMQB | Digital, CMOS | 9-28/2 | 4031BFM | Digital, CMOS | 9-30/9 |
| 025BFC | Digital, CMOS | 9-28/2 | 4031BFMQB | Digital, CMOS | 9-30/9 |
| 025BFM | Digital, CMOS | 9-28/2 | 4031BPC | Digital, CMOS | 9-30/9 |
| 025BFMQB | Digital, CMOS | 9-28/2 | 4034BDC | Digital, CMOS | 9-30/1 |
| 025BPC | Digital, CMOS | 9-28/2 | 4034BDM | Digital, CMOS | 9-30/ |
| 0272DC | Memories | 10-6/2 | 4034BDMQB | Digital, CMOS | 9-30/ |
| 0272PC | Memories | 10-6/2 | 4034BFC | Digital, CMOS | 9-30/ |
| 0273DC | Memories | 10-6/3 | 4034BFM | Digital, CMOS | 9-30/ |
| 0273PC | Memories | 10-6/3 | 4034BFMQB | Digital, CMOS | 9-30/ |
| 0274DC | Memories | 10-6/4 | 4034BPC | Digital, CMOS | 9-30/ |
| 0274PC | Memories | 10-6/4 | 4035BDC | Digital, CMOS | 9-30/ |
| 0275DC | Memories | 10-6/5 | 4035BDM | Digital, CMOS | 9-30/ |
| 0275PC | Memories | 10-6/5 | 4035BDMQB | Digital, CMOS | 9-30/ |
| 027BDC | Digital, CMOS | 9-29/1 | 4035BFC | Digital, CMOS | 9-30/ |
| 027BDM | Digital, CMOS | 9-29/1 | 4035BFM | Digital, CMOS | 9-30/ |
| 027BDMQB | Digital, CMOS | 9-29/1 | 4035BFMQB | Digital, CMOS | 9-30/ |
| 027BFC | Digital, CMOS | 9-29/1 | 4035BPC | Digital, CMOS | 9-30/ |
| 027BFM | Digital, CMOS | 9-29/1 | 4040BDC | Digital, CMOS | 9-32/6 |
| 027BFMQB | Digital, CMOS | 9-29/1 | 4040BDM | Digital, CMOS | 9-32/6 |
| 027BPC | Digital, CMOS | 9-29/1 | 4040BDMQB | Digital, CMOS | 9-32/6 |
| 028BDC | Digital, CMOS | 9-30/14 | 4040BFC | Digital, CMOS | 9-32/6 |
| 028BDM | Digital, CMOS | 9-30/14 | 4040BFM | Digital, CMOS | 9-32/6 |
| 028BDMQB | Digital, CMOS | 9-30/14 | 4040BFMQB | Digital, CMOS | 9-32/6 |
| 028BFC | Digital, CMOS | 9-30/14 | 4040BPC | Digital, CMOS | 9-32/6 |
| 028BFM | Digital, CMOS | 9-30/14 | 4041BDC | Digital, CMOS | 9-28/ |
| 028BFMQB | Digital, CMOS | 9-30/14 | 4041BDM | Digital, CMOS | 9-28/1 |
| 028BPC | Digital, CMOS | 9-30/14 | 4041BDMQB | Digital, CMOS | 9-28/1 |
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| 029BFC | Digital, CMOS | 9-32/2 | 4041BPC | Digital, CMOS | 9-28/1 |
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| 4042BFM | Digital, CMOS | 9-29/6 | | Digital, CMOS | 9-28/1 |
| 4042BFMQB | Digital, CMOS | 9-29/6 | 4049BFM | Interface | 8-12/8 |
| 4042BPC | Digital, CMOS | 9-29/6 | 5120 | Digital, CMOS | 9-28/1 |
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| 4040004 | D: :: 1 01400 | 0.00/7 | 4049BFMQB | Interface | 8-12/8 9-28/1 |
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| 4043BDMQB | Digital, CMOS | 9-29/7 | 4049BPC | Digital, CMOS | 9-28/1 |
| 4043BFC | Digital, CMOS | 9-29/7 | 40EORDC | | |
| 4043BFM | Digital, CMOS | 9-29/7 | 4050BDC | Interface | 8-12/9 9-28/1 |
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| 4043BPC | Digital, CMOS | 9-29/7 | 4050BDM | Interface | 8-12/9 |
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| 4044BDM | Digital, CMOS | 9-29/8 | 4050BDMQB | Interface | 8-12/9 |
| 4044BDMQB | Digital, CMOS | 9-29/8 | 6.45 } | Digital, CMOS | 9-28/1 |
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| 4044BFM | Digital, CMOS | 9-29/8 | 4000010 | Digital, CMOS | 9-28/1 |
| 4044BFMQB | Digital, CMOS | 9-29/8 | 4050BFM | Interface | 8-12/9 |
| 4044BPC | Digital, CMOS | 9-29/8 | 403051 101 | Digital, CMOS | 9-28/1 |
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| 4045BDMQB | Digital, CMOS | 9-32/12 | 4050BPC | Interface | 8-12/9 |
| 4045BFC | Digital, CMOS | 9-32/12 | 4054000 | Digital, CMOS | 9-28/1 |
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| 4045BFMQB | Digital, CMOS | 9-32/12 | 21892 | Digital, CMOS | 9-31/1 |
| 4045BPC | Digital, CMOS | 9-32/12 | 1,885.9 | | 9-33/6 |
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| 4046BFC | Digital, CMOS | 9-33/4 | 4051BDMQB | Interface | 8-16/4 |
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| 54198DM | Digital, TTL | 9-13/2 | 54293DM | Digital, TTL | 9-15/6 |
| 54198DMQB | Digital, TTL | 9-13/2 | 54293DMQB | Digital, TTL | 9-15/6 |
| 54198FM | Digital, TTL | 9-13/2 | 54293FM | Digital, TTL | 9-15/6 |
| 54198FMQB | Digital, TTL | 9-13/2 | 54293FMQB | Digital, TTL | 9-15/6 |
| 54199DM | Digital, TTL | 9-12/14 | 54298DM | Digital, TTL | 9-8/5, |
| 54199DMQB | Digital, TTL | 9-12/14 | 97 S.S. | | 9-9/12 |
| 54199FM | Digital, TTL | 9-12/14 | 3191-6 | | 9-13/1 |
| 54199FMQB | Digital, TTL | 9-12/14 | 54298DMQB | Digital, TTL | 9-8/5, |
| 5420DM | Digital, TTL | 9-3/16 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | ATT MAND O | 9-9/12 |
| 5420DMQB | ECONOMIC CONTRACTOR | 9-3/16 | 8(8)49 | | 9-13/ |
| | Digital, TTL | | 54298FM | Digital, TTL | 9-8/5, |
| 5420FM | Digital, TTL | 9-3/16 | 34230FM | Digital, 11L | 9-9/12 |
| 5420FMQB | Digital, TTL | 9-3/16 | 5.70 | | 9-13/1 |
| 5421DM 5421DMQB | Digital, TTL | 9-4/16 9-4/16 | 54298FMQB | Digital, TTL | 9-8/5, |
| 042 IDMQB | Digital, TTL | 9-4/10 | 34290FMQD | Digital, 11L | 9-9/12 |
| 5421FM | Digital, TTL | 9-4/16 | 5/8/-5 | | 9-13/1 |
| 5421FMQB | Digital, TTL | 9-4/16 | | | |
| 5422DM | Digital, TTL | 9-3/18 | 5430DM | Digital, TTL | 9-3/22 |
| 5422DMQB | Digital, TTL | 9-3/18 | 5430DMQB | Digital, TTL | 9-3/22 |
| 5422FM | Digital, TTL | 9-3/18 | 5430FM | Digital, TTL | 9-3/22 |
| 5422FMQB | Digital, TTL | 9-3/18 | 5430FMQB | Digital, TTL | 9-3/22 |
| 5423DM | Digital, TTL | 9-4/5 | 5432DM | Digital, TTL | 9-4/17 |
| 5423DMQB | Digital, TTL | 9-4/5 | 5432DMQB | Digital, TTL | 9-4/17 |
| 5423FM | Digital, TTL | 9-4/5 | 5432FM | Digital, TTL | 9-4/17 |
| 5423FMQB | Digital, TTL | 9-4/5 | 5432FMQB | Digital, TTL | 9-4/17 |
| | D: 11 TT | 0.444 | 5437DM | Interface | 8-3/2 |
| 5425DM | Digital, TTL | 9-4/4 | | Digital, TTL | 9-3/10 |
| 5425DMQB | Digital, TTL | 9-4/4 | ALC: NO | | 9-18/ |
| 5425FM 5425FMQB | Digital, TTL | 9-4/4 | 5437DMQB | Interface | 8-3/2 |
| 5427DM | Digital, TTL | 9-4/4 9-4/3 | 3437 DMQB | Digital, TTL | 9-3/10 |
| 3427 DIWI | Digital, TTL | 9-4/3 | 4111-0 | Digital, TTL | 9-18/ |
| 5427DMQB | Digital, TTL | 9-4/3 | NUT- | | |
| 5427FM | Digital, TTL | 9-4/3 | 5437FM | Interface | 8-3/2 |
| 5427FMQB | Digital, TTL | 9-4/3 | ACCEPT | Digital, TTL | 9-3/10 |
| 54279DM | Digital, TTL | 9-7/11 | and the | JIT LEGGIG | 9-18/ |
| 54279DMQB | Digital, TTL | 9-7/11 | 5437FMQB | Interface | 8-3/2 |
| 54279FM | Digital, TTL | 9-7/11 | 82.111-6 | Digital, TTL | 9-3/10 |
| 54279FMQB | Digital, TTL | 9-7/11 | BINTER | | 9-18/1 |
| 54283DM | Digital, TTL | 9-20/7 | 5438DM | Interface | 8-3/3 |
| 54283DMQB | Digital, TTL | 9-20/7 | | Digital, TTL | 9-3/11 |
| 54283FM | Digital, TTL | 9-20/7 | 115109 | | 9-18/2 |
| 40005400 | Di-II-I TTI | 0.0017 | 5438DMQB | Interface | 8-3/3 |
| 54283FMQB | Digital, TTL | 9-20/7 | | Digital, TTL | 9-3/11 |
| 54290DM | Digital, TTL | 9-15/1 | 617-8 | | 9-18/2 |
| 54290DMQB | Digital, TTL | 9-15/1 | 5/30EM | Interfere | 9 2 / 2 |
| 54290FM 54290FMQB | Digital, TTL Digital, TTL | 9-15/1 | 5438FM | Interface | 8-3/3 |
| J 12301 WIGD | Digital, TTL | 9-15/1 | ALEE G | Digital, TTL | 9-3/11 9-18/2 |
| | JET GARRIES | | 5438FMQB | Interface | 8-3/3 |
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| 5439DMQB | Digital, TTL | 9-3/12 | | Digital, TTL | 9-11/3, |
| 5439FM | Digital, TTL | 9-3/12 | 0.00 | PET INSANT | 9-11/13 |
| 5439FMQB | Digital, TTL | 9-3/12 | 3183-8 | | 9-19/4 |
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| | | 9-18/5 | 5445FMQB | Interface | 8-7/9 |
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| 5441FM | Interface | 8-7/8 | 5447DM | Interface | 8-7/11 |
| | Digital, TTL | 9-19/1 | 21,3-4 | Digital, TTL | 9-19/13 |
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| 5442FM | Digital TTI | 9-11/4, | 5448DM | Interface | 8-7/13 |
| 3442FM | Digital, TTL | 9-11/4, | | Digital, TTL | 9-19/7 |
| 5442FMQB | Digital, TTL | 9-11/14 | 5448DMQB | Interface | 0.7/10 |
| 3442FMQB | Digital, ITL | 9-11/14 | 3440DMQB | Digital, TTL | 8-7/13 |
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| 5443DMQB | Digital, TTL | 9-11/16 | 5448FMQB | Interface | 8-7/13 |
| 5443FM | Digital, TTL | 9-11/16 | O4401 MIQB | Digital, TTL | 9-19/7 |
| 5443FMQB | Digital, TTL | 9-11/16 | 111111 | Digital, ITL | 9-19// |
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| 5444DM | Digital, TTL | 9-11/17 | 10.000 | Digital, TTL | 9-19/8 |
| 5444DMQB | Digital, TTL | 9-11/17 | 5449FMQB | Interface | 8-8/2 |
| 5444FM | Digital, TTL | 9-11/17 | | Digital, TTL | 9-19/8 |
| 5444FMQB | Digital, TTL | 9-11/17 | 5450DM | Digital, TTL | 9-5/4 |
| 5445DM | Interface | 8-7/9 | 5450DMQB | Digital, TTL | 9-5/4 |
| | Digital, TTL | 9-11/3, | 5450FM | Digital, TTL | 9-5/4 |
| | | 9-11/13, | 5450FMQB | Digital, TTL | 9-5/4 |
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| | | | 5451DMQB | Digital, TTL | 9-5/5 |
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| 5453DM | Digital, TTL | 9-5/6 | 5482FMQB | Digital, TTL | 9-20/4 |
| 5453DMQB | Digital, TTL | 9-5/6 | 5483ADM | Digital, TTL | 9-20/5 |
| 5453FM | Digital, TTL | 9-5/6 | 5483ADMQB | Digital, TTL | 9-20/5 |
| 5453FMQB | Digital, TTL | 9-5/6 | 5483AFM | Digital, TTL | 9-20/5 |
| 5454DM | Digital, TTL | 9-5/7 | 5483AFMQB | Digital, TTL | 9-20/5 |
| 5454DMQB | Digital, TTL | 9-5/7 | 5485DM | Digital, TTL | 9-20/18 |
| 5454FM | Digital, TTL | 9-5/7 | 5485DMQB | Digital, TTL | 9-20/18 |
| 5454FMQB | Digital, TTL | 9-5/7 | 5485FM | Digital, TTL | 9-20/1 |
| 5460DM | Digital, TTL | 9-5/14 | 5485FMQB | Digital, TTL | 9-20/1 |
| 5460DMQB | Digital, TTL | 9-5/14 | 5486DM | Digital, TTL | 9-4/18 |
| 5460FM | Digital, TTL | 9-5/14 | 5486DMQB | Digital, TTL | 9-4/18 |
| 5460FMQB | Digital, TTL | 9-5/14 | 5486FM | Digital, TTL | 9-4/18 |
| 5470DM | | | 5486FMQB | Digital, TTL | 9-4/18 |
| 5470DMQB | Digital, TTL | 9-6/8 | | | |
| D470DMQB | Digital, TTL | 9-6/8 | 5490ADM | Digital, TTL | 9-15/2 |
| 5470FM | Digital, TTL | 9-6/8 | 5490ADMQB | Digital, TTL | 9-15/2 |
| 470FMQB | Digital, TTL | 9-6/8 | 5490AFM | Digital, TTL | 9-15/2 |
| 5472DM | Digital, TTL | 9-6/5 | 5490AFMQB | Digital, TTL | 9-15/2 |
| 5472DMQB | Digital, TTL | 9-6/5 | 5491DM | Digital, TTL | 9-14/1 |
| 5472FM | Digital, TTL | 9-6/5 | 5491DMQB | Digital, TTL | 9-14/1 |
| 5472FMQB | Digital, TTL | 9-6/5 | 5491FM | Digital, TTL | 9-14/1 |
| 5473DM | Digital, TTL | 9-6/15 | 5491FMQB | Digital, TTL | 9-14/1 |
| 5473DMQB | Digital, TTL | 9-6/15 | 5492DM | Digital, TTL | 9-15/4 |
| 5473FM | Digital, TTL | 9-6/15 | 5492DMQB | Digital, TTL | 9-15/4 |
| 5473FMQB | Digital, TTL | 9-6/15 | 5492FM | Digital, TTL | 9-15/4 |
| 5474DM | Digital, TTL | 9-6/9 | 5492FMQB | Digital, TTL | 9-15/4 |
| 5474DMQB | Digital, TTL | 9-6/9 | 5493ADM | Digital, TTL | 9-15/7 |
| 5474FM | Digital, TTL | 9-6/9 | 5493ADMQB | Digital, TTL | 9-15/7 |
| 5474FMQB | Digital, TTL | 9-6/9 | 5493AFM | Digital, TTL | 9-15/7 |
| 5475DM | Digital, TTL | 9-7/15 | 5493AFMQB | Digital, TTL | 9-15/7 |
| 5475DMQB | Digital, TTL | 9-7/15 | 5494DM | Digital, TTL | 9-12/6 |
| 5475FM | Digital, TTL | 9-7/15 | 10000000000000000000000000000000000000 | | 9-14/3 |
| 5475FMQB | Digital, TTL | 9-7/15 | 5494DMQB | Digital, TTL | 9-12/6 |
| 5476DM | Digital, TTL | 9-6/21 | 3134 | | 9-14/3 |
| 5476DMQB | Digital, TTL | 9-6/21 | 5494FM | Digital, TTL | 9-12/6 |
| 5476FM | Digital, TTL | 9-6/21 | | | 9-14/3 |
| 476FMQB | Digital, TTL | 9-6/21 | 5494FMQB | Digital, TTL | 9-12/6 |
| 5477FM | Digital, TTL | 9-7/16 | and a | | 9-14/3 |
| 477FMQB | Digital, TTL | 9-7/16 | 5495DM | Digital, TTL | 9-12/7 |
| 5480DM | Digital, TTL | 9-20/1 | 5495DMQB | Digital, TTL | 9-12/7 |
| 480DMQB | Digital, TTL | 9-20/1 | 5495FM | Digital, TTL | 9-12/7 |
| 5480FM | Digital, TTL | 9-20/1 | 5495FMQB | Digital, TTL | 9-12/7 |
| 480FMQB | Digital, TTL | 9-20/1 | 5496DM | Digital, TTL | 9-12/9 |
| 5482DM | Digital, TTL | 9-20/4 | 5496DMQB | Digital, TTL | 9-12/9 |
| 5482DMQB | Digital, TTL | 9-20/4 | 5496FM | Digital, TTL | 9-12/9 |
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| 5496FMQB | Digital, TTL | 9-12/9 | 54H108DM | Digital, TTL | 9-6/2 |
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| 5497DMQB | Digital, TTL | 9-17/3 | 54H108FM | Digital, TTL | 9-6/2 |
| 5497FM | Digital, TTL | 9-17/3 | 54H108FMQB | Digital, TTL | 9-6/2 |
| 5497FMQB | Digital, TTL | 9-17/3 | 54H11DM | Digital, TTL | 9-4/1 |
| 54H00DM | Digital, TTL | 9-3/6 | 54H11DMQB | Digital, TTL | 9-4/1 |
| 54HOODMQB | Digital, TTL | 9-3/6 | 54H11FM | Digital, TTL | 9-4/1 |
| 54H00FM | Digital, TTL | | 54H11FMQB | Digital, TTL | |
| 54HOOFMQB | | 9-3/6 | | | 9-4/1 |
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| 54H01DMQB | Digital, TTL | 9-3/7 | 54H183FM | Digital, TTL | 9-20/ |
| 54H01FM | Digital, TTL | 9-3/7 | 54H183FMQB | Digital, TTL | 9-20/ |
| 54H01FMQB | Digital, TTL | 9-3/7 | 54H20DM | Digital, TTL | 9-3/1 |
| 54H04DM | Digital, TTL | 9-3/1 | 54H20DMQB | Digital, TTL | 9-3/1 |
| 54H04DMQB | Digital, TTL | 9-3/1 | 54H20FM | Digital, TTL | 9-3/1 |
| 54H04FM | Digital, TTL | 9-3/1 | 54H20FMQB | Digital, TTL | 9-3/1 |
| 54H04FMQB | Digital, TTL | 9-3/1 | 54H21DM | Digital, TTL | 9-4/1 |
| 54H05DM | Digital, TTL | 9-3/2 | 54H21DMQB | Digital, TTL | 9-4/1 |
| 54H05DMQB | Digital, TTL | 9-3/2 | 54H21FM | Digital, TTL | 9-4/1 |
| 54H05FM | Digital, TTL | 9-3/2 | 54H21FMQB | Digital, TTL | 9-4/1 |
| 54H05FMQB | Digital, TTL | 9-3/2 | 54H22DM | Digital, TTL | 9-3/1 |
| 54H08DM | Digital, TTL | 9-4/11 | 54H22DMQB | Digital, TTL | 9-3/1 |
| 54H08DMQB | Digital, TTL | 9-4/11 | 54H22FM | Digital, TTL | 9-3/1 |
| 54H08FM | Digital, TTL | 9-4/11 | 54H22FMQB | Digital, TTL | 9-3/1 |
| 54H08FMQB | Digital, TTL | 9-4/11 | 54H30DM | Digital, TTL | 9-3/2 |
| 54H10DM | Digital, TTL | 9-3/14 | 54H30DMQB | Digital, TTL | 9-3/2 |
| 54H10DMQB | Digital, TTL | 9-3/14 | 54H30FM | Digital, TTL | 9-3/2 |
| 54H10FM | Digital, TTL | 9-3/14 | 54H30FMQB | Digital, TTL | 9-3/2 |
| 54H10FMQB | Digital, TTL | 9-3/14 | 54H40DM | Interface | 8-3/5 |
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| 54H102DM | Digital, TTL | 9-6/7 | | Digital, ITE | 9-3/1 |
| 54H102DMQB | Digital, TTL | 9-6/7 | 54H40FM | Interface | 8-3/5 |
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| 54H102FM | Digital, TTL | 9-6/7 | 18/86 | AT Jugali 11 | 9-18/ |
| 54H102FMQB | Digital, TTL | 9-6/7 | 54114671167 | Digital TE | |
| 54H103DM | Digital, TTL | 9-6/18 | 54H40FMQB | Interface | 8-3/5 |
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| 54H106DM | Digital, TTL | 9-6/23 | 54H50DMQB | Digital, TTL | 9-5/4 |
| 54H106DMQB | Digital, TTL | 9-6/23 | 54H50FM | Digital, TTL | 9-5/4 |
| 54H106FM | Digital, TTL | 9-6/23 | 54H50FMQB | Digital, TTL | 9-5/4 |
| 54H106FMQB | Digital, TTL | 9-6/23 | 54H51DM | Digital, TTL | 9-5/5 |
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| 54H51FMQB | Digital, TTL | 9-5/5 | 54H76DM | Digital, TTL | 9-6/22 |
| 54H52DM | Digital, TTL | 9-5/3 | 54H76DMQB | Digital, TTL | 9-6/2 |
| 54H52DMQB | Digital, TTL | 9-5/3 | 54H76FM | Digital, TTL | 9-6/2 |
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| 54H52FM | Digital, TTL | 9-5/3 | 54H76FMQB | Digital, TTL | 9-6/22 |
| 54H52FMQB | Digital, TTL | 9-5/3 | 54H78DM | Digital, TTL | 9-6/26 |
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| 54H53DMQB | Digital, TTL | 9-5/6 | 54H78FM | Digital, TTL | 9-6/2 |
| 54H53FM | Digital, TTL | 9-5/6 | 54H78FMQB | Digital, TTL | 9-6/2 |
| 54H53FMQB | Digital, TTL | 9-5/6 | 54H87DM | Digital, TTL | 9-21/ |
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| 54H55DMQB | Digital, TTL | 9-5/11 | 54LS00FM | Digital, TTL | 9-3/6 |
| 54H55FM | Digital, TTL | 9-5/11 | 54LS00FMQB | Digital, TTL | 9-3/6 |
| 54H55FMQB | Digital, TTL | 9-5/11 | 54LS02DM | Digital, TTL | 9-4/1 |
| 54H60DM | Digital, TTL | 9-5/14 | 54LS02DMQB | Digital, TTL | 9-4/1 |
| 54H60DMQB | Digital, TTL | 9-5/14 | 54LS02FM | Digital, TTL | 9-4/1 |
| 54H60FM | Digital, TTL | 9-5/14 | 54LS02FMQB | Digital, TTL | 9-4/1 |
| 54H60FMQB | Digital, TTL | 9-5/14 | 54LS03DM | Digital, TTL | 9-3/7 |
| 54H61DM | Digital, TTL | 9-5/13 | 54LS03DMQB | Digital, TTL | 9-3/7 |
| 54H61DMQB | Digital, TTL | 9-5/13 | 54LS03FM | Digital, TTL | 9-3/7 |
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| 54H61FMQB | Digital, TTL | 9-5/13 | 54LS04DM | Digital, TTL | 9-3/1 |
| 54H62DM | Digital, TTL | 9-5/15 | 54LS04DMQB | Digital, TTL | 9-3/1 |
| 54H62DMQB | Digital, TTL | 9-5/15 | 54LS04FM | Digital, TTL | 9-3/1 |
| 54H62FM | Digital, TTL | 9-5/15 | 54LS04FMQB | Digital, TTL | 9-3/1 |
| 54H62FMQB | Digital, TTL | 9-5/15 | 54LS05DM | Digital, TTL | 9-3/2 |
| 54H71DM | Digital, TTL | 9-6/3 | 54LS05DMQB | Digital, TTL | 9-3/2 |
| 54H71DMQB | Digital, TTL | 9-6/3 | 54LS05FM | Digital, TTL | 9-3/2 |
| 54H71FM | Digital, TTL | 9-6/3 | 54LS05FMQB | Digital, TTL | 9-3/2 |
| 54H71FMQB | Digital, TTL | 9-6/3 | 54LS08DM | Digital, TTL | 9-4/1 |
| 54H72DM | Digital, TTL | 9-6/6 | 54LS08DMQB | Digital, TTL | 9-4/1 |
| 54H72DMQB | Digital, TTL | 9-6/6 | 54LS08FM | Digital, TTL | 9-4/1 |
| 54H72FM | Digital, TTL | 9-6/6 | 54LS08FMQB | Digital, TTL | 9-4/1 |
| 54H72FMQB | Digital, TTL | 9-6/6 | 54LS09DM | Digital, TTL | 9-4/1 |
| 54H73DM | Digital, TTL | 9-6/17 | 54LS09DMQB | Digital, TTL | 9-4/1 |
| 54H73DMQB | Digital, TTL | 9-6/17 | 54LS09FM | Digital, TTL | 9-4/1 |
| 54H73FM | Digital, TTL | 9-6/17 | 54LS09FMQB | Digital, TTL | 9-4/1 |
| 54H73FMQB | Digital, TTL | 9-6/17 | 54LS10DM | Digital, TTL | 9-3/1 |
| 54H74DM | Digital, TTL | 9-6/10 | 54LS10DMQB | Digital, TTL | 9-3/1 |
| 54H74DMQB | Digital, TTL | 9-6/10 | 54LS10FM | Digital, TTL | 9-3/1 |
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| 54LS107DM | Digital, TTL | 9-7/7 | 54LS138DMQB | Digital, TTL | 9-11/6 |
| 54LS107DMQB | Digital, TTL | 9-7/7 | 54LS138FM | Digital, TTL | 9-11/6 |
| 54LS107FM | Digital, TTL | 9-7/7 | 54LS138FMQB | Digital, TTL | 9-11/6 |
| 54LS107FMQB | Digital, TTL | 9-7/7 | 54LS139DM | Digital, TTL | 9-10/1 |
| 54LS109DM | Digital, TTL | 9-7/5 | 54LS139DMQB | Digital, TTL | 9-10/1 |
| 54LS109DMQB | Digital, TTL | 9-7/5 | 54LS139FM | Digital, TTL | 9-10/1 |
| 54LS109FM | Digital, TTL | 9-7/5 | 54LS139FMQB | Digital, TTL | 9-10/1 |
| 54LS109FMQB | Digital, TTL | 9-7/5 | 54LS14DM | Digital, TTL | 9-3/5 |
| 54LS11DM | Digital, TTL | 9-4/14 | 54LS14DMQB | Digital, TTL | 9-3/5 |
| 54LS11DMQB | Digital, TTL | 9-4/14 | 54LS14FM | Digital, TTL | 9-3/5 |
| 54LS11FM | Digital, TTL | 9-4/14 | 54LS14FMQB | Digital, TTL | 9-3/5 |
| 54LS11FMQB | Digital, TTL | 9-4/14 | 54LS15DM | Digital, TTL | 9-4/15 |
| 54LS112DM | Digital, TTL | 9-6/25 | 54LS15DMQB | Digital, TTL | 9-4/15 |
| 54LS112DMQB | Digital, TTL | 9-6/25 | 54LS15FM | Digital, TTL | 9-4/15 |
| 54LS112FM | Digital, TTL | 9-6/25 | 54LS15FMQB | Digital, TTL | 9-4/15 |
| 54LS112FMQB | Digital, TTL | 9-6/25 | 54LS151DM | Digital, TTL | 9-10/2 |
| 54LS113DM | Digital, TTL | 9-6/20 | 54LS151DMQB | Digital, TTL | 9-10/2 |
| 54LS113DMQB | Digital, TTL | 9-6/20 | 54LS151FM | Digital, TTL | 9-10/2 |
| 54LS113FM | Digital, TTL | 9-6/20 | 54LS151FMQB | Digital, TTL | 9-10/2 |
| 54LS113FMQB | Digital, TTL | 9-6/20 | 54LS152DM | Digital, TTL | 9-10/7 |
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| 54LS114DMQB | Digital, TTL | 9-7/2 | 54LS152FM | Digital, TTL | 9-10/7 |
| 54LS114FM | Digital, TTL | 9-7/2 | 54LS152FMQB | Digital, TTL | 9-10/7 |
| 54LS114FMQB | Digital, TTL | 9-7/2 | 54LS153DM | Digital, TTL | 9-9/17 |
| 54LS125DM | Digital, TTL | 9-5/16 | 54LS153DMQB | Digital, TTL | 9-9/17 |
| 54LS125DMQB | Digital, TTL | 9-5/16 | 54LS153FM | Digital, TTL | 9-9/17 |
| 54LS125FM | Digital, TTL | 9-5/16 | 54LS153FMQB | Digital, TTL | 9-9/17 |
| 54LS125FMQB | Digital, TTL | 9-5/16 | 54LS155DM | Digital, TTL | 9-10/1 |
| 54LS126DM | Digital, TTL | 9-5/17 | 54LS155DMQB | Digital, TTL | 9-10/1 |
| 54LS126DMQB | Digital, TTL | 9-5/17 | 54LS155FM | Digital, TTL | 9-10/1 |
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| 54LS126FMQB | Digital, TTL | 9-5/17 | 54LS156DM | Digital, TTL | 9-10/1 |
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| 54LS13DMQB | Digital, TTL | 9-3/17 | 54LS156FM | Digital, TTL | 9-10/1 |
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| 54LS13FMQB | Digital, TTL | 9-3/17 | 54LS157DM | Digital, TTL | 9-9/4 |
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| 54LS133DMQB | Digital, TTL | 9-3/23 | 54LS157FM | Digital, TTL | 9-9/4 |
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| 54LS133FMQB | Digital, TTL | 9-3/23 | 54LS158DM | Digital, TTL | 9-9/6 |
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| 54LS136DMQB | Digital, TTL | 9-4/19 | 54LS158FM | Digital, TTL | 9-9/6 |
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| 54LS136FMQB | Digital, TTL | 9-4/19 | 54LS160DM | Digital, TTL | 9-16/4 |
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| 54LS160FMQB | Digital, TTL | 9-16/4 | 54LS174FM | Digital, TTL | 9-8/13, |
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| 54LS161FMQB | Digital, TTL | 9-16/6 | 54LS175DM | Digital, TTL | 9-8/3, |
| 54LS162DM | Digital, TTL | 9-16/8 | 5410475DHOD | Distant TTI | 9-13/1 |
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| 54LS165FMQB | Digital, TTL | 9-14/6 | 54LS192FMQB | Digital, TTL | . 9-16/1 |
| 54LS168DM | Digital, TTL | 9-16/11 | 54LS193DM | Digital, TTL | 9-16/1 |
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| 54LS168FM | Digital, TTL | 9-16/11 | 54LS193FM | Digital, TTL | 9-16/1 |
| 54LS168FMQB | Digital, TTL | 9-16/11 | 54LS193FMQB | Digital, TTL | 9-16/1 |
| 54LS169DM | Digital, TTL | 9-16/12 | 54LS194DM | Digital, TTL | 9-13/1 |
| 54LS169DMQB | Digital, TTL | 9-16/12 | 54LS194DMQB | Digital, TTL | 9-13/1 |
| 54LS169FM | Digital, TTL | 9-16/12 | 54LS194FM | Digital, TTL | 9-13/1 |
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| 54LS170DM | Digital, TTL | 9-8/23, | 54LS195DM | Digital, TTL | 9-12/1 |
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| 54LS170FMQB | Digital, TTL | 9-8/23, | 54LS195FMQB | Digital, TTL | 9-12/1 |
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| 54LS173FM | Digital, TTL | 9-14/19 | 54LS196DMQB | Digital, TTL | 9-7/18 |
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| 54LS22DM | Digital, TTL | 9-3/18 | 54LS251FM | Digital, TTL | 9-10/4 |
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| 54LS22FM | Digital, TTL | 9-3/18 | 54LS253DM | Digital, TTL | 9-9/19 |
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| 54LS26FMQB | Digital, TTL | 9-3/9 | 54LS298DM | Digital, TTL | 9-8/6, |
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| 54LS279DMQB | Digital, TTL | 9-7/12 | 54LS30FM | Digital, TTL | 9-3/22 |
| 54LS279FM | Digital, TTL | 9-7/12 | 54LS30FMQB | Digital, TTL | 9-3/22 |
| 54LS279FMQB | Digital, TTL | 9-7/12 | 54LS32DM | Digital, TTL | 9-4/17 |
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| 54LS28DMQB | Digital, TTL | 9-4/7 | 54LS32FM | Digital, TTL | 9-4/17 |
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| 54LS28FMQB | Digital, TTL | 9-4/7 | 54LS352DM | Digital, TTL | 9-9/21 |
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| 54LS283DMQB | Digital, TTL | 9-20/8 | 54LS352FM | Digital, TTL | 9-9/21 |
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| 54LS290FM | Digital, TTL | 9-15/15 | 54LS365FMQB | Digital, TTL | 9-5/18 |
| 54LS290FMQB | Digital, TTL | 9-15/15 | 54LS366DM | Digital, TTL | 9-5/19 |
| 54LS293DM | Digital, TTL | 9-15/16 | 54LS366DMQB | Digital, TTL | 9-5/19 |
| 54LS293DMQB | Digital, TTL | 9-15/16 | 54LS366FM | Digital, TTL | 9-5/19 |
| 54LS293FM | Digital, TTL | 9-15/16 | 54LS366FMQB | Digital, TTL | 9-5/19 |
| 4LS293FMQB | Digital, TTL | 9-15/16 | 54LS367DM | Digital, TTL | 9-5/20 |
| 4LS295ADM | Digital, TTL | 9-14/9 | 54LS367DMQB | Digital, TTL | 9-5/20 |
| 54LS295ADMQB | Digital, TTL | 9-14/9 | 54LS367FM | Digital, TTL | 9-5/20 |
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| 54LS295AFMQB | Digital, TTL | 9-14/9 | 54LS368DM | Digital, TTL | 9-5/2 |
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| 54LS399DMQB | Digital, TTL | 9-14/1 | 54LS502FMQB | Digital, TTL | 9-14/20 |
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| 54LS40DM | Digital, TTL | 9-3/19 | 54LS51FM | Digital, TTL | 9-5/5 |
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| 54LS40FM | Digital, TTL | 0.2/10 | 54LS51FMQB | Digital, TTL | 9-5/5 |
| 54LS40FMQB | | 9-3/19 | 54LS54DM | Digital, TTL | 9-5/8 |
| 54LS42DM | Digital, TTL | 9-3/19 | 54LS54DMQB | Digital, TTL | 9-5/8 |
| J-LU-ZDINI | Digital, TTL | 9-11/5, | 54LS54FM | Digital, TTL | 9-5/8 |
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| 54LS55FMQB | Digital, TTL | 9-5/12 | 54LS90DM | Digital, TTL | 9-15/ |
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| 9024FMQB | Digital, TTL | 9-7/3 | 9094FM | Digital, DTL | 9-37/2 |
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| 905FMQB | Digital, RTL/CTL | 9-36/6 | 9099FM | Digital, DTL | 9-37/2 |
| 905HC | Digital, RTL/CTL | 9-36/6 | 9099FMQB | Digital, DTL | 9-37/2 |
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| 912HM | Digital, RTL/CTL | 9-36/13 | 930DMQB | Digital, DTL | 9-36/2 |
| 912HMQB | Digital, RTL/CTL | 9-36/13 | 930FM | Digital, DTL | 9-36/2 |
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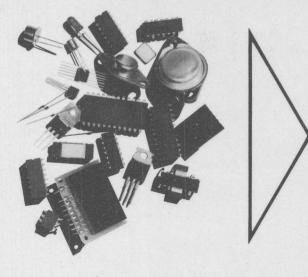
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| μ A706BPC | Linear | 7-14/14 | μ Α7300PC | Linear | 7-16/ |
| μ A709DC | Linear | 7-8/13 | μA7302DC | Linear | 7-12/ |
| μ Α709HC | Linear | 7-8/13 | μ A7302PC | Linear | 7-12/ |
| μ Α709PC | Linear | 7-8/13 | μΑ730НС | Linear | 7-8/2 |
| μA710DC | Linear | 7-12/10 | μΑ732PC | Linear | 7-16/- |
| μA710DM | Linear | 7-12/10 | μA733DC | Interface | 8-15/ |
| μ A710FM | | | μA733DM | Interface | 8-15/ |
| μ Α710HC | Linear | 7-12/10 | μA733DMQB | Interface | |
| μΑΤΙΌΠΟ | Linear | 7-12/10 | μΑΙ SSUMQB | interrace | 8-15/8 |
| μ A710HM | Linear | 7-12/10 | μ A733FM | Interface | 8-15/ |
| μ A710PC | Linear | 7-12/10 | μA733FMQB | Interface | 8-15/ |
| μA711DC | Linear | 7-12/11 | μΑ733НС | Interface | 8-15/ |
| μ A711DM | Linear | 7-12/11 | μΑ733НМ | Interface | 8-15/ |
| μA711DMQB | Linear | 7-12/11 | µА733НМQВ | Interface | 8-15/ |
| μ A711FM | Linear | 7-12/11 | μΑ733РС | Interface | 8-15/5 |
| μA711FMQB | Linear | 7-12/11 | μ A734DC | Linear | 7-12/ |
| μ A711HC | Linear | 7-12/11 | μ A734DM | Linear | 7-12/ |
| μ A711HM | Linear | 7-12/11 | μΑ734НС | Linear . | 7-12/ |
| μA711HMQB | Linear | 7-12/11 | μΑ734НΜ | Linear | 7-12/ |
| μ A711PC | Linear | 7-12/11 | μ A739DC | Linear | 7-16/ |
| μ A714HC | Linear | 7-8/14 | | Interface | 8-15/ |
| μ A714EHC | Linear | 7-8/15 | μΑ739РС | Linear | 7-16/ |
| μA714LHC | Linear | | μητοσιο | Interface | |
| μΑ7151DC | Interface | 7-8/16 8-14/4 | μΑ7390ТС | Linear | 8-15/6 7-16/1 |
| μ A7151PC | | | μΑ7391PC | | |
| μΑ7 15 IPC | Interface | 8-14/4 | | Linear | 7-16/2 |
| | Linear | 7-8/17 | μ A7392DC | Linear | 7-16/2 |
| μA715HC | Linear | 7-8/17 | μ A7392DM | Linear | 7-16/2 |
| μA720DC | Linear | 7-16/2 | μA7392PC | Linear | 7-16/2 |
| μ A720PC | Linear | 7-16/2 | μ Α740EHC | Linear | 7-8/22 |
| μ A721PC | Linear | 7-16/3 | μ A741DC | Linear | 7-8/23 |
| μ A723DM | Linear | 7-7/5 | μ A741HC | Linear | 7-8/23 |
| μA723DMQB | Linear | 7-7/5 | μ A741PC | Linear | 7-8/23 |
| μ A723HM | Linear | 7-7/5 | μ A741RC | Linear | 7-8/23 |
| μA723HMQB | Linear | 7-7/5 | μA741EDC | Linear | 7-8/24 |

| Device No. | Family | Page/Item | Device No. | Family | Page/Iten |
|--------------------------|----------|-----------|--------------------------|--------|------------------|
| μ Α741EHC | Linear | 7-8/24 | μ A7805UC | Linear | 7-5/2 |
| μA741ERC | Linear | 7-8/24 | μA7805UCQR | Linear | 7-5/2 |
| μ A741ETC | Linear | 7-8/24 | μA7806KM | Linear | 7-5/6 |
| μA742DC | Linear | 7-16/18 | μΑ7806KC | Linear | 7-5/7 |
| μ A746HC | Linear | 7-15/12 | μA7806UC | Linear | 7-5/7 |
| μ Α746PC | Linear | 7-15/12 | 47000KM | | |
| | | | μ Α7808ΚΜ | Linear | 7-5/8 |
| μA747DC | Linear | 7-8/25 | μ A7808KC | Linear | 7-5/9 |
| μ Α747HC | Linear | 7-8/25 | μ A7808UC | Linear | 7-5/9 |
| μΑ747РС | Linear | 7-8/25 | μ A781PC | Linear | 7-15/1 |
| uA747PCQR | Linear | 7-8/25 | μ A7812KM | Linear | 7-5/12 |
| A747EDC | Linear | 7-8/26 | μ A7812KC | Linear | 7-5/13 |
| A747EHC | Linear | 7-8/26 | μ A7812UC | Linear | 7-5/13 |
| μA748DC | Linear | 7-8/27 | μA7812UCQR | Linear | 7-5/13 |
| 4748HC | Linear | 7-8/27 | μ A7815KM | Linear | 7-5/14 |
| 4748RC | Linear | 7-8/27 | μ A7815KC | Linear | 7-5/15 |
| 4748TC | Linear | 7-8/27 | μA7815UC | Linear | 7-5/15 |
| 4749DC | Linear | 7-16/14 | μA7815UCQR | Linear | 7-5/15 |
| µA749DHC | Linear | 7-16/14 | μ A7818KM | Linear | 7-5/16 |
| иA749DM | Linear | 7-16/14 | μA7818KC | Linear | 7-5/17 |
| uA749PC | Linear | 7-16/14 | μ A7818UC | Linear | 7-5/17 |
| uA753TC | Linear | 7-16/5 | μ Α7824KM | Linear | 7-5/18 |
| uA757DC | Linear | 7-16/6 | μA7824KC | Linear | 7-5/19 |
| μ A 757 DM | Linear | 7-16/6 | μA7824UC | Linear | 7-5/19 |
| μ A 758PC | Linear | 7-16/7 | μA783P3C | Linear | 7-14/1 |
| μA760DC | Linear | 7-12/13 | μA783P4C | Linear | 7-14/1 |
| μ A760DM | Linear | 7-12/13 | μΑ787РС | Linear | 7-15/1 |
| μA760DMQB | Linear | 7-12/13 | μA788PC | Linear | 7-15/16 |
| µА760HС | Linear | 7-12/13 | μA7885KM | Linear | 7-13/10 |
| µА760НМ | Linear | 7-12/13 | μA7885KC | Linear | 7-5/10 |
| μA760HMQB | Linear | 7-12/13 | μA7885UC | Linear | 7-5/11 |
| μ Α767PC | Linear | 7-16/8 | μ Α78C05U1C | | |
| μΑ775DC | Linear | 7-12/14 | | Linear | 7-3/12 |
| 4775PC | Linear | 7-12/14 | μA78C06U1C | Linear | 7-3/15 |
| μ A776DC | Linear | 7-12/14 | μA78C08U1C | Linear | 7-3/18 |
| ATTODO | Lilleal | 7-10/1, | μΑ78C10U1C μΑ78C12U1C | Linear | 7-3/19 7-3/22 |
| A776U0 | 1668.3 | | | | |
| иА776НС | Linear | 7-10/1, | μA78C15U1C | Linear | 7-4/1 |
| A770TO | tudnel . | 7-8/28 | μ A78C17U1C | Linear | 7-4/2 |
| μ Α776TC | Linear | 7-10/1, | μ A78C18U1C | Linear | 7-4/3 |
| 477700 | 16000 | 7-8/28 | μ A78C20U1C | Linear | 7-4/6 |
| μ A777DC | Linear | 7-10/2 | μ A78C22U1C | Linear | 7-4/7 |
| и А777НС | Linear | 7-10/2 | μ A78C24U1C | Linear | 7-4/10 |
| μ Α777TC | Linear | 7-10/2 | μ A78CBKC | Linear | 7-6/10 |
| μ A780PC | Linear | 7-15/13 | μ A78CBUC | Linear | 7-6/10 |
| μ Α7805ΚΜ | Linear | 7-5/1 | μ A78GKC | Linear | 7-7/9 |
| μ A7805KC | Linear | 7-5/2 | μ Α78GKM | Linear | 7-7/10 |
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| μΑ78H05KC | Hybrids | 6-4/4 | µА78М20НС | Linear | 7-4/5 |
| an onosko | Linear | 7-6/14 | μΑ78M20UC | Linear | 7-4/5 |
| "A78H05KCQB | Hybrids | 6-4/4 | | Linear | 7-4/8 |
| μΑ/ οπυσκ CQB | Linear | 7-6/14 | μΑ78M24HM μΑ78M24HC | Linear | 7-4/8 |
| | Lillear | 7-0714 | μΑΥΟΜΙΖΨΠΟ | Lilleal | 1-4/3 |
| μ Α78H05KM | Hybrids | 6-4/4 | μ A78M24UC | Linear | 7-4/9 |
| | Linear | 7-6/14 | μ A78MGHM | Linear | 7-7/7 |
| μA78H12KC | Hybrids | 6-4/7 | μA78MGHC | Linear | 7-7/8 |
| | Linear | 7-6/16 | μA78MGT2C | Linear | 7-7/8 |
| μA78H15KC | Hybrids | 6-4/8 | μA78MGU1C | Linear | 7-7/8 |
| | Linear | 7-6/17 | μ A78S40DC | Linear | 7-7/20 |
| μA78HGKC | Hybrids | 6-4/10 | μA78S40DM | Linear | 7-7/19 |
| Aronako | Linear | 7-7/11 | μΑ78S40PC | Linear | 7-7/19 |
| μA78L05AHC | Linear | 7-7/11 | | | 7-7/20 |
| | Linear | | μA7905KM | Linear | |
| A78L05AWC | | 7-3/2 | μ Α7905KC | Linear | 7-5/21 |
| uA78L09AHC | Linear | 7-3/5 | μ A7905UC | Linear | 7-5/21 |
| μA78L09AWC | Linear | 7-3/5 | μ A 7906KM | Linear | 7-5/22 |
| μA78L12AHC | Linear | 7-3/6 | μ Α7906KC | Linear | 7-5/23 |
| μA78L12AWC | Linear | 7-3/6 | μA7906UC | Linear | 7-5/23 |
| μA78L15AHC | Linear | 7-3/7 | μ Α7908KM | Linear | 7-5/24 |
| μA78L15AWC | Linear | 7-3/7 | | | |
| | | | μ A7908KC | Linear | 7-6/1 |
| μA78L18AHC | Linear | 7-3/8 | μ A7908UC | Linear | 7-6/1 |
| μA78L18AWC | Linear | 7-3/8 | μ A7912KM | Linear | 7-6/2 |
| μA78L24AHC | Linear | 7-3/9 | μ A7912KC | Linear | 7-6/3 |
| μA78L24AWC | Linear | 7-3/9 | μ A7912UC | Linear | 7-6/3 |
| μA78L26AHC | Linear | 7-3/1 | μ A 7915 KM | Linear | 7-6/4 |
| μA78L26AWC | Linear | 7-3/1 | μ A7915KC | Linear | 7-6/5 |
| μA78L62AHC | Linear | 7-3/3 | μA7915UC | Linear | 7-6/5 |
| μA78L62AWC | Linear | 7-3/3 | μ A7918KM | Linear | 7-6/6 |
| μA78L82AHC | Linear | 7-3/4 | μ A7918KC | Linear | 7-6/7 |
| μA78L82AWC | Linear | 7-3/4 | | | |
| | | | μA7918UC | Linear | 7-6/7 |
| μ Α78Μ05ΗΜ | Linear | 7-3/10 | μ A791KC | Linear | 7-10/3 |
| μ Α78M05HC | Linear | 7-3/11 | μ A791P5C | Linear | 7-10/3 |
| μ Α78M05UC | Linear | 7-3/11 | μ A7924KM | Linear | 7-6/8 |
| μΑ78M06HM μΑ78M06HC | Linear | 7-3/13 | μ A7924KC | Linear | 7-6/9 |
| µА78МОБНС | Linear | 7-3/14 | μ A7924UC | Linear | 7-6/9 |
| μ Α78M06UC | Linear | 7-3/14 | μΑ796НС | Linear | 7-15/1 |
| μ Α78Μ08ΗΜ | Linear | 7-3/16 | μΑ796НМ | Linear | 7-15/1 |
| μΑ78М08НС | Linear | 7-3/17 | μ A796PC | Linear | 7-15/17 |
| μ A78M08UC | Linear | 7-3/17 | μΑ798НС | Linear | 7-10/4 |
| μ Α78Μ12HM | Linear | 7-3/20 | 470000 | | |
| A79M12HC | Lincor | 7.0/04 | μA798RC | Linear | 7-10/4 |
| μΑ78M12HC | Linear | 7-3/21 | μA798TC | Linear | 7-10/4 |
| μΑ78M12UC | Linear | 7-3/21 | μA79GKM | Linear | 7-7/16 |
| μ A78M15HM | Linear | 7-3/23 | μA79GKC | Linear | 7-7/17 |
| μΑ78M15HC | Linear | 7-3/24 | μA79GU1C | Linear | 7-7/17 |
| μ A78M15UC | Linear | 7-3/24 | | | |

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| μΑ79HGKC | Hybrids | 6-4/11 | ZPD18 | Diodes | 2-13/15 |
| art official co | Linear | 7-7/18 | ZPD2,7 | Diodes | 2-8/10 |
| μA79HGKM | Hybrids | 6-4/11 | ZPD2,7 ZPD20 | Diodes | 2-13/23 |
| um siidkiii | Linear | 7-7/18 | ZPD20 | Diodes | 2-13/23 |
| 4.70M05AHC | Linear | | ZPD22 ZPD24 | Diodes | |
| μA79M05AHC | Linear | 7-4/12 | ZPU24 | Diodes | 2-14/6 |
| μ Α79M 05AUC | Linear | 7-4/12 | ZPD27 | Diodes | 2-14/14 |
| µА79М05НМ | Linear | 7-4/11 | ZPD3 | Diodes | 2-8/14 |
| µА79М06АНС | Linear | 7-4/14 | ZPD3,3 | Diodes | 2-8/19 |
| μA79M06AUC | Linear | 7-4/14 | ZPD3,6 | Diodes | 2-9/7 |
| µА79М06НМ | Linear | 7-4/13 | ZPD3,9 | Diodes | 2-9/14 |
| µА79М08АНС | Linear | 7-4/16 | ZPD30 | Diodes | 2-14/22 |
| µA79M08AUC | Linear | 7-4/16 | ZPD33 | Diodes | 2-14/29 |
| μΑ79М08НМ | Linear | 7-4/15 | ZPD4,3 | Diodes | 2-9/21 |
| μ Α79M12AHC | Linear | 7-4/18 | ZPD4,7 | ⊸Diodes | 2-9/28 |
| μ Α79M12AUC | Linear | 7-4/18 | ZPD5,1 | Diodes | 2-10/4 |
| μ Α79M12HM | Linear | 7-4/17 | ZPD5,6 | Diodes | 2-10/11 |
| μ Α79M15AHC | Linear | 7-4/20 | ZPD6,2 | Diodes | 2-10/19 |
| μA79M15AUC | Linear | 7-4/20 | ZPD6,8 | Diodes | 2-10/27 |
| μ A79M15HM | Linear | 7-4/19 | ZPD7,5 | Diodes | 2-11/5 |
| μ Α79M20AHC | Linear | 7-4/22 | ZPD8,2 ZPD9,1 | Diodes Diodes | 2-11/13 |
| μ Α79M20AUC | Linear | 7-4/22 | 2209,1 | Diodes | 2-11/22 |
| µА79М20НМ | Linear | 7-4/21 | BURN NEWS | | |
| μA79M24AHC | Linear | 7-4/24 | 8121 | | |
| μA79M24AUC | Linear | 7-4/24 | 2.54 | | |
| μ Α79M24HM | Linear | 7-4/23 | · 相談 1 | | |
| μA79MGHC | Linear | 7-7/15 | -5485 | | |
| μA79MGHM | Linear | 7-7/15 | 10.84 | | |
| μA79MGT2C | Linear | 7-7/14 | DEST. | | |
| μA79MG | Linear | 7-7/15 | ENERT . | | |
| μAF111HM | Linear | 7-10/14 | 43.00 | | |
| μAF211HC | Linear | Telegraph 1 | 20001 | | |
| μAF311HC | Linear | 7-10/15 | 10.00 | | |
| μAF355HC | Linear | 7-10/16 | restrict. | | |
| μAF355TC | | 7-8/10 | A PARTY OF THE PAR | | |
| μAF355TC | Linear | 7-8/10 | | | |
| µAF356HC | Linear | 7-8/11 | ALSO T | | |
| μAF356TC | Linear | 7-8/11 | | | |
| VN46AF | Transistors, Power | 3-12/6 | | | |
| VN66AF | Transistors, Power | 3-12/7 | 14 P. S. | | |
| VN88AF | Transistors, Power | 3-12/12 | | | |
| ZPD10 | Diodes | 2-11/30 | 0518-1 | | |
| ZPD11 | Diodes | 2-12/7 | | | |
| ZPD12 | Diodes | 2-12/15 | 15105 | | |
| ZPD13 | Diodes | 2-12/22 | 10000 | | |
| ZPD15 | Diodes | 2-12/30 | STATE OF THE PARTY | | |
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DIODES

COMPUTER DIODES (BY ASCENDING trr) GLASS PACKAGE

| Item | DEVICE NO. | t _{rr} ns Max | BV V Min | I _R nA Max | @ | V _R V | V _F V Max | @ | IF mA | C pF Max | Package No. |
|------|---------------|------------------------------|----------------|-----------------------------|-----|---------------------|----------------------------|------|----------|----------------|----------------|
| 1 | FD700 | 0.70 | 30 | 50 | 29 | 20 | 1.1 | 0# | 50 | 1.0 | DO-7 |
| 2 | 1N4376 | 0.75 | 20 | 100 | Ge. | 10 | 1.1 | Op. | 50 | 1.0 | DO-7 |
| 3 | BAY82 | 0.75 | 15 | 100 | 39 | 12 | 1.0 | eb [| 20 | 1.3 | DO-7 |
| 4 | FD777 | 0.75 | 15 | 100 | ds | 8.0 | 1.0 | 88 | 20 | 1.3 | DO-7 |
| 5 | 1N5282 | 2.0 | 80 | 100 | 35 | 55 | 1.3 | 80 | 500 | 2.5 | DO-35 |
| 6 | 1N4153 | 2.0 | 75 | 50 | | 50 | 0.88 | | 20 | 4.0 | DO-35 |
| 7 | 1N4151 | 2.0 | 75 | 50 | | 50 | 1.0 | | 50 | 4.0 | DO-35 |
| 8 | 1N4305 | 2.0 | 75 | 100 | | 50 | 0.85 | | 10 | 2.0 | DO-35 |
| 9 | BAY71 | 2.0 | 50 | 100 | | 35 | 1.0 | | 20 | 2.0 | DO-35 |
| 10 | 1N4152 | 2.0 | 40 | 50 | 1 | 30 | 0.88 | | 20 | 4.0 | DO-35 |
| 11 | 1N4154 | 2.0 | 35 | 100 | | 25 | 1.0 | | 30 | 4.0 | DO-35 |
| 12 | 1N914 | 4.0 | 100 | 25 | | 20 | 1.0 | | 10 | 4.0 | DO-35 |
| 13 | 1N914A | 4.0 | 100 | 25 | | 20 | 1.0 | | 20 | 4.0 | DO-35 |
| 14 | 1N914B | 4.0 | 100 | 25 | | 20 | 1.0 | | 100 | 4.0 | DO-35 |
| 15 | 1N916 | 4.0 | 100 | 25 | | 20 | 1.0 | | 10 | 2.0 | DO-35 |
| 16 | 1N916A | 4.0 | 100 | 25 | | 20 | 1.0 | | 20 | 2.0 | DO-35 |
| 17 | 1N916B | 4.0 | 100 | 25 | | 20 | 1.0 | | 30 | 2.0 | DO-35 |
| 18 | 1N4.148 | 4.0 | 100 | 25 | | 20 | 1.0 | | 10 | 4.0 | DO-35 |
| 19 | 1N4149 | 4.0 | 100 | 25 | | 20 | 1.0 | | 10 | 2.0 | DO-35 |
| 20 | 1N4446 | 4.0 | 100 | 25 | | 20 | 1.0 | | 20 | 4.0 | DO-35 |
| 21 | 1N4447 | 4.0 | 100 | 25 | | 20 | 1.0 | | 20 | 4.0 | DO-35 |
| 22 | 1N4448 | 4.0 | 100 | 25 | | 20 | 1.0 | | 100 | 2.0 | DO-35 |
| 23 | 1N4449 | 4.0 | 100 | 25 | | 20 | 1.0 | | 30 | 2.0 | DO-35 |
| 24 | 1N3604 | 4.0 | 75 | 50 | | 50 | 1.0 | | 50 | 2.0 | DO-35 |
| 25 | 1N3600 | 4.0 | 75 | 100 | | 50 | 1.0 | | 200 | 2.5 | DO-35 |
| 26 | FDH600 | 4.0 | 75 | 100 | | 50 | 1.0 | 10 | 200 | 2.5 | DO-35 |
| 27 | 1N3064 | 4.0 | 75 | 100 | | 50 | 1.0 | | 10 | 2.0 | DO-35 |
| 28 | 1N4150 | 4.0 | 75 | 100 | | 50 | 1.0 | | 200 | 2.5 | DO-35 |
| 29 | 1N4454 | 4.0 | 75 | 100 | | 50 | 1.0 | | 10 | 2.0 | DO-35 |
| 30 | BAX13 | 4.0 | 50 | 200 | | 50 | 1.0 | | 20 | 3.0 | DO-35 |
| 31 | BAY74 | 4.0 | 50 | 100 | | 35 | 1.1 | | 300 | 3.0 | DO-35 |
| 32 | FDH900 | 4.0 | 45 | 500 | | 40 | 1.1 | | 100 | 3.0 | DO-35 |

DIODES

COMPUTER DIODES (BY ASCENDING trr) (Cont'd)

GLASS PACKAGE

| Item | DEVICE NO. | t _{rr} ns Max | BV V Min | I _R nA Max | @ VR V | V _F V Max | @ | I F mA | C pF Max | Package No. |
|------|---------------|------------------------------|----------------|-----------------------------|--------|----------------------------|---|-----------|----------------|----------------|
| 1 | FDH666 | 4.0 | 40 | 100 | 25 | 1.0 | | 100 | 3.5 | DO-35 |
| 2 | 1N4450 | 4.0 | 40 | 50 | 30 | 1.0 | | 200 | 4.0 | DO-35 |
| 3 | 1N4009 | 4.0 | 35 | 100 | 25 | 1.0 | | 30 | 4.0 | DO-35 |
| 4 | 1N625 | 4.0 | 30 | 1000 | 20 | 1.5 | | 4.0 | = = 3 | DO-35 |
| 5 | FDH999 | 5.0 | 35 | 1000 | 25 | 1.0 | | 10 | 5.0 | DO-35 |

LOW LEAKAGE DIODES (BY DESCENDING BV)

| Item | DEVICE NO. | BV V Min | I _R nA Max | @ V _R | V _F V Max | @ | l _F mA | C pF Max | Package No. |
|------|---------------|----------------|-----------------------------|------------------|----------------------------|-------|----------------------|----------------|----------------|
| 6 | 1N486B | 250 | 50 | 225 | 1.0 | 30 | 100 | 1 Tan | DO-35 |
| 7 | 1N485B | 200 | 25 | 180 | 1.0 | 601 | 100 | | DO-35 |
| 8 | 1N459 | 200 | 25 | 175 | 1.0 | cer | 3.0 | - | DO-35 |
| 9 | 1N459A | 200 | 25 | 175 | 1.0 | 3431 | 100 | 1100 | DO-35 |
| 10 | FDH300 | 150 | 1.0 | 125 | 1.0 | ion | 200 | 6.0 | DO-35 |
| 11 | 1N3595 | 150 | 1.0 | 125 | 1.0 | 001 | 200 | 8.0 | DO-35 |
| 12 | FDH333 | 150 | 3.0 | 125 | 1.05 | Tour. | 200 | 6.0 | DO-35 |
| 13 | 1N458A | 150 | 5.0 | 125 | 1.0 | 1 apr | 100 | 1 - | DO-35 |
| 14 | 1N484B | 150 | 25 | 130 | 1.0 | ser | 100 | To an a | DO-35 |
| 15 | 1N458 | 150 | 25 | 125 | 1.0 | eos | 7.0 | 6.0 | DO-35 |
| 16 | BAY73 | 125 | 5.0 | 100 | 1.0 | l ger | 200 | 8.0 | DO-35 |
| 17 | 1N483B | 80 | 25 | 70 | 1.0 | 001 | 100 | - | DO-35 |
| 18 | 1N457 | 70 | 25 | 60 | 1.0 | 1 001 | 20 | 8.0 | DO-35 |
| 19 | 1N457A | 70 | 25 | 60 | 1.0 | 1 27 | 100 | -02 | DO-35 |
| 20 | 1N482B | 40 | 25 | 36 | 1.0 | | 100 | 0084 | DO-35 |
| 21 | FJT1100 | 30 | 0.001 | 5.0 | 1.05 | | 10 | 1.5 | DO-7 |
| 22 | 1N456A | 30 | 25 | 25 | 1.0 | | 100 | - | DO-35 |
| 23 | 1N456 | 30 | 25 | 25 | 1.0 | | 40 | 10 | DO-35 |

DIODES

HIGH VOLTAGE SWITCHING DIODES (BY DESCENDING BV)

GLASS PACKAGE

| Item | DEVICE NO. | BV V Min | IR nA Max | @ VR V | V _F V Max | @ mA | C pF Max | t _{rr} ns Max | Package No. |
|------|---------------|----------------|-----------------|--------|----------------------------|------|----------------|------------------------------|----------------|
| 1 | 1N661 | 240 | 10000 | 200 | 1.0 | 6.0 | 0-1 | 300 | DO-35 |
| 2 | FDH400 | 200 | 100 | 150 | 1.0 | 200 | 2.0 | 50 | DO-35 |
| 3 | 1N3070 | 200 | 100 | 175 | 1.0 | 100 | 5.0 | 50 | DO-35 |
| 4 | 1N643 | 200 | 1000 | 100 | 1.0 | 10 | 3.0 | 300 | DO-35 |
| 5 | 1N842 | 200 | 100 | 160 | 1.0 | 150 | ge- | 300 | DO-35 |
| 6 | 1N629 | 200 | 1000 | 175 | 1.5 | 4.0 | 0- | 1000 | DO-35 |
| 7 | FDH444 | 150 | 50 | 100 | 1.1 | 200 | 2.5 | 60 | DO-35 |
| 8 | 1N628 | 150 | 1000 | 125 | 1.5 | 4.0 | 0= | 1000 | DO-35 |
| 9 | BAY72 | 125 | 100 | 100 | 1.0 | 100 | 5.0 | 50 | DO-35 |
| 10 | 1N658 | 120 | 50 | 50 | 1.0 | 100 | | 300 | DO-35 |
| 11 | 1N660 | 120 | 5000 | 100 | 1.0 | 6.0 | _ | 300 | DO-35 |
| 12 | 1N627 | 100 | 1000 | 75 | 1.5 | 4.0 | | 1000 | DO-35 |
| 13 | 1N626 | 50 | 1000 | 35 | 1.5 | 4.0 | - | 1000 | DO-35 |

GENERAL PURPOSE DIODES (BY DESCENDING BV)

| Item | DEVICE NO. | BV V Min | IR nA @ Max | V _R | V _F V Max | @ | IF mA | C pF Max | t _{rr} ns Max | Package No. |
|------|---------------|----------------|-------------------|----------------|----------------------------|-------|----------|----------------|------------------------------|----------------|
| 14 | 1N661 | 240 | 10000 | 200 | 1.0 | | 6.0 | | 300 | DO-35 |
| 15 | 1S923 | 200 | 100 | 200 | 1.2 | 212 | 200 | | | DO-35 |
| 16 | 1N463A | 200 | 500 | 175 | 1.0 | 310 | 100 | - | - | DO-35 |
| 17 | BA129 | 200 | 10 | 180 | 1.0 | | 50 | 6.0 | 64 5256 | DO-35 |
| 18 | 1S922 | 150 | 100 | 150 | 1.2 | 20 | 200 | - | 10 PER | DO-35 |
| 19 | BAX16 | 150 | 100 | 150 | 1.0 | | 1.0 | 10 | 120 | DO-35 |
| 20 | 1N660 | 120 | 5000 | 100 | 1.0 | ale i | 6.0 | - | 8848.5 | DO-35 |
| 21 | 1S921 | 100 | 100 | 100 | 1.2 | CAT | 200 | - | at e so | DO-35 |
| 22 | BA219 | 100 | 200 | 50 | 0.85 | 361 | 10 | 5.0 | 11 1 10 1 | DO-35 |
| 23 | BA128 | 75 | 100 | 50 | 1.0 | | 50 | 5.0 | 0.0 20.00 | DO-35 |
| 24 | 1N462A | 70 | 500 . | 60 | 1.0 | | 100 | | 00.000 | DO-35 |
| 25 | 1N659 | 60 | 5000 | 50 | 1.0 | 6.1 | 6.0 | 1 | 44.700 | DO-35 |
| 26 | 1S920 | 50 | 100 | 50 | 1.2 | ng s | 200 | | 33 0000 | DO-35 |

DIODES

GENERAL PURPOSE DIODES (BY DESCENDING BV) (Cont'd)
GLASS PACKAGE

| Item | DEVICE NO. | BV V Min | IR nA @ Max | V _R V | V _F V Max | @ IF mA | C pF Max | t _{rr} ns Max | Package No. |
|------|---------------|----------------|-------------------|------------------|----------------------------|---------|----------------|------------------------------|----------------|
| 1 | BA218 | 50 | 50 | 25 | 1.0 | 10 | 5.0 | -133 | DO-35 |
| 2 | 1544 | 50 | 50 | 10 | 1.15 | 10 | 6.0 | 02118 | DO-35 |
| 3 | FDH900 | 45 | 500 | 40 | 1.1 | 100 | 3.0 | 4.0 | DO-35 |
| 4 | FDH999 | 35 | 1000 | 25 | 1.0 | 10 | 5.0 | 5.0 | DO-35 |
| 5 | 1N461A | 30 | 500 | 25 | 1.0 | 100 | 10 | 200 | DO-35 |
| 6 | BA217 | 30 | 50 | 10 | 1.0 | 10 | 5.0 | <u> 0</u> 88 | DO-35 |
| 7 | BA130 | 30 | 100 | 25 | 1.0 | 10 | 2.0 | 16551 | DO-35 |
| 8 | BA164 | 20 | 2000 | 15 | 1.0 | 10 | 03= | <u>-9</u> 93 | DO-35 |
| 9 | BA216 | 10 | 1500 | 10 | 1.0 | 00115 | 882 | 470 | DO-35 |

MILITARY QUALIFIED SMALL SIGNAL DIODES (NUMERIC LISTING)

| Item | DEVICE NO. | BV V Min | IR nA Max | @ V | V _F V Max | @ mA | C pF Max | t _{rr} ns Max | Package No. |
|------|---------------|----------------|-----------------|-----|----------------------------|------|----------------|------------------------------|----------------|
| 10 | 1N457JAN | 70 | 25 | 60 | 1.0 | 20 | 6.0 | N -12 0 | DO-7 |
| 11 | 1N458JAN | 150 | 25 | 125 | 1.0 | 7.0 | 6.0 | - | DO-7 |
| 12 | 1N459JAN | 200 | 25 | 175 | 1.0 | 3.0 | 6.0 | = 5 -0 € | DO-7 |
| 13 | 1N483BJAN | 80 | 25 | 70 | 1.0 | 100 | 10.82 | 0 | DO-7 |
| 14 | 1N483BJANTX | 80 | 25 | 70 | 1.0 | 100 | <u> </u> | 100 | DO-7 |
| 15 | 1N485BJAN | 200 | 25 | 180 | 1.0 | 100 | 1008 | | DO-7 |
| 16 | 1N485BJANTX | 200 | 25 | 180 | 1.0 | 100 | 008 | ALADI | DO-7 |
| 17 | 1N486BJAN | 250 | 25 | 225 | 1.0 | 100 | 200 | HS E8 | DO-7 |
| 18 | 1N486BJANTX | 250 | 25 | 225 | 1.0 | 100 | 281 | 0.00 | DO-7 |
| 19 | 1N914JAN | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 20 | 1N914JANTX | 100 | 25 | 20 | 1.0 | 10 | 4.0 - | 4.0 | DO-35 |
| 21 | 1N3064JAN | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-7 |
| 22 | 1N3064JANTX | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-7 |
| 23 | 1N3595JAN | 150 | 1.0 | 125 | 1.0 | 200 | 8.0 | 3000 | DO-7 |
| 24 | 1N3595JANTX | 150 | 1.0 | 125 | 1.0 | 200 | 8.0 | 3000 | DO-7 |
| 25 | 1N3595JANTXV | 150 | 1.0 | 125 | 1.0 | 200 | 8.0 | 3000 | DO-7 |
| 26 | 1N3600JAN | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-7 |
| 27 | 1N3600JANTX | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-7 |

DIODES

MILITARY QUALIFIED SMALL SIGNAL DIODES (NUMERIC LISTING) (Cont'd) GLASS PACKAGE

| Item | DEVICE NO. | BV V Min | I _R nA @ Max | V _R V | VF V @ Max | IF mA | C pF Max | t _{rr} ns Max | Package No. |
|------|----------------|----------------|-------------------------|------------------|------------------|----------|----------------|------------------------------|----------------|
| 1 | 1N3600JANTXV | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-7 |
| 2 | 1N4148JAN | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 3 | 1N4148JANTX | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 4 | 1N4148JANTXV | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 5 | 1N4148-1JAN | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 6 | 1N4148-1JANTX | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 7 | 1N4148-1JANTXV | 100 | 25 | 20 | 1.0 | 10 | 4.0 | 4.0 | DO-35 |
| 8 | 1N4150JAN | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-35 |
| 9 | 1N4150JANTX | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-35 |
| 10 | 1N4150JANTXV | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-35 |
| 11 | 1N4150-1JAN | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-35 |
| 12 | 1N4150-1JANTX | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-35 |
| 13 | 1N4150-1JANTXV | 75 | 100 | 50 | 1.0 | 200 | 2.5 | 4.0 | DO-35 |
| 14 | 1N4376JAN | 20 | 100 | 10 | 1.1 | 50 | 1.0 | 0.75 | DO-7 |
| 15 | 1N4376JANTX | 20 | 100 | 10 | 1.1 | 50 | 1.0 | 0.75 | DO-7 |
| 16 | 1N4454JAN | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-35 |
| 17 | 1N4454JANTX | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-35 |
| 18 | 1N4454JANTXV | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-35 |
| 19 | 1N4454-1JAN | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-35 |
| 20 | 1N4454-1JANTX | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-35 |
| 21 | 1N4454-1JANTXV | 75 | 100 | 50 | 1.0 | 10 | 2.0 | 4.0 | DO-35 |

HOT CARRIER DIODE

| Item | DEVICE NO. | BV V Min | I _R nA Max | @ | V _R V | V _F V Max | @ | IF mA | C pF Max | NF dB Max | Package No. |
|------|---------------|----------------|-----------------------------|---|---------------------|----------------------------|---|----------|----------------|-----------------|----------------|
| 22 | FH1100 | 5.0 | 50 | | 1.0 | 0.55 | | 10 | 1.0 | 10 | DO-7 |

DIODES

VOLTAGE VARIABLE CAPACITOR DIODES

GLASS PACKAGE

| Item | DEVICE NO. | BV V Min | IR nA Max | @ VR | C pF Max | Figure of Merit (Q) Min | C1/C4 V _{R1} = 0.1V V _{R4} = 4.0V | C3/C20 V _{R3} = 3V V _{R20} = 20V | Package No. |
|------|---------------|----------------|-----------------|------|----------------|-------------------------------|---|--|----------------|
| 1 | RF400 | 35 | 30 | 30 | 10 | 350 | 2.0 | 2.0 | DO-35 |
| 2 | RF401 | 35 | 30 | 30 | 7.0 | 350 | 2.0 | 2.0 | DO-35 |

BANDSWITCH DIODES

GLASS PACKAGE

| Item | DEVICE NO. | BV V Min | I _R nA Max | @ | V _R V | C pF Max | Rs Ω Max | V _F V Max | @ mA | Package No. |
|------|---------------|----------------|-----------------------------|---|------------------|----------------|----------------|----------------------------|------|----------------|
| 3 | BA243 | 20 | 100 | | 15 | 2.0 | 1.0 | 1.0 | 100 | DO-35 |
| 4 | BA244 | 20 | 100 | | 15 | 2.0 | 0.5 | 1.0 | 100 | DO-35 |

ZENER DIODES (BY ASCENDING VZ)

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±VZ % | Z _Z Ω Max | @ IZ mA | I _R μA Max | V _R @ V | T.C. %/°C Typ (Max) | PD mW TA=25°C | Package No. |
|------|---------------|----------------------------|-------------------|----------------------------|------------|-----------------------------|-----------------------|---------------------------|---------------------|----------------|
| 5 | 1N5221B | . 2.4 | 5 | 30 | 20 | 100 | 1.0 | (085) | 500 | DO-35 |
| 6 | BZX55C2V4 | 2.4 | 5 | 80 | 5.0 | 50 | 1.0 | 080 | 500 | DO-35 |
| 7 | 1N5222B | 2.5 | 5 | 30 | 20 | 100 | 1.0 | (085) | 500 | DO-35 |
| 8 | 1N5223B | 2.7 | 5 | 30 | 20 | 75 | 1.0 | (080) | 500 | DO-35 |
| 9 | BZX55C2V7 | 2.7 | 5 | 75 | 5.0 | 50 | 1.0 | 070 | 500 | DO-35 |
| 10 | ZPD2,7 | 2.7 | 5 | 83 | 5.0 | _ | | (090) | 500 | DO-35 |
| 11 | 1N5224B | 2.8 | 5 | 30 | 20 | 75 | 1.0 | (080) | 500 | DO-35 |
| 12 | 1N5225B | 3.0 | 5 | 29 | 20 | 50 | 1.0 | (075) | 500 | DO-35 |
| 13 | BZX55C3V0 | 3.0 | 5 | 80 | 5.0 | 40 | 1.0 | 065 | 500 | DO-35 |
| 14 | ZPD3 | 3.0 | 5 | 90 | 5.0 | v - | | (090) | 500 | DO-35 |
| 15 | 1N746A | 3.3 | 5 | 28 | 20 | 10 | 1.0 | 070 | 500 | DO-35 |
| 16 | 1N5226B | 3.3 | 5 | 28 | 20 | 25 | 1.0 | (070) | 500 | DO-35 |
| 17 | BZX55C3V3 | 3.3 | 5 | 85 | 5.0 | 40 | 1.0 | 060 | 500 | DO-35 |
| 18 | BZY88C3V3 | 3.3 | 5 | 22 | 20 | 3.0 | 1.0 | (091) | 500 | DO-35 |
| 19 | ZPD3,3 | 3.3 | 5 | 90 | 5.0 | | | (080) | 500 | DO-35 |

^{*}Tolerance: All zener diodes are also available in ±1%, ±2%, ±10% and ±20% tolerances.

DIODES

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±Vz % | Z _Z Ω Max | @ IZ mA | IR μA Max | V _R ⊚ V | T.C. %/°C Typ (Max) | PD mW T _A =25°C | Package No. |
|------|---------------|----------------------------|-------------------|----------------------------|------------|-----------------|-----------------------|---------------------------|----------------------------------|----------------|
| 1 | 1N4728A | 3.3 | 5 | 10 | 76 | 100 | 1.0 | 14 | 1000 | DO-41 |
| 2 | BZX85C3V3 | 3.3 | 5 | 20 | 80 | 40 | 1.0 | 065 | 1000 | DO-41 |
| 3 | 1N747A | 3.6 | 5 | 24 | 20 | 10 | 1.0 | 065 | 500 | DO-35 |
| 4 | 1N5227B | 3.6 | 5 | 24 | 20 | 15 | 1.0 | (065) | 500 | DO-35 |
| 5 | BZX55C3V6 | 3.6 | 5 | 85 | 5.0 | 40 | 1.0 | 055 | 500 | DO-35 |
| 6 | BZY88C3V6 | 3.6 | 5 | 20 | 20 | 3.0 | 1.0 | (069) | 500 | DO-35 |
| 7 | ZPD3,6 | 3.6 | 5 | 90 | 5.0 | _ | _0 | (080) | 500 | DO-35 |
| 8 | 1N4729A | 3.6 | 5 | 10 | 69 | 100 | 1.0 | - | 1000 | DO-41 |
| 9 | BZX85C3V6 | 3.6 | 5 | 15 | 60 | 20 | 1.0 | 065 | 1000 | DO-41 |
| 10 | 1N748A | 3.9 | 5 | 23 | 20 | 10 | 1.0 | 060 | 500 | DO-35 |
| 11 | 1N5228B | 3.9 | 5 | 23 | 20 | 10 | 1.0 | (060) | 500 | DO-35 |
| 12 | BZX55C3V9 | 3.9 | 5 | 80 | 5.0 | 40 | 1.0 | 050 | 500 | DO-35 |
| 13 | BZY88C3V9 | 3.9 | 5 | 18 | 20 | 3.0 | 1.0 | (062) | 500 | DO-35 |
| 14 | ZPD3,9 | 3.9 | 5 | 90 | 5.0 | | _ a | (070) | 500 | DO-35 |
| 15 | 1N4730A | 3.9 | 5 | 9.0 | 64 | 50 | 1.0 | 9.5 | 1000 | DO-41 |
| 16 | BZX85C3V9 | 3.9 | 5 | 15 | 60 | 10 | 1.0 | 045 | 1000 | DO-41 |
| 17 | 1N749A | 4.3 | 5 | 22 | 20 | 2.0 | 1.0 | ±.055 | 500 | DO-35 |
| 18 | 1N5229B | 4.3 | 5 | 22 | 20 | 5.0 | 1.0 | (±.055) | 500 | DO-35 |
| 19 | BZX55C4V3 | 4.3 | 5 | 70 | 5.0 | 40 | 1.5 | 040 | 500 | DO-35 |
| 20 | BZY88C4V3 | 4.3 | 5 | 17 | 20 | 3.0 | 1.0 | (047) | 500 | DO-35 |
| 21 | ZPD4,3 | 4.3 | 5 | 90 | 5.0 | (4) | <u> </u> | (060) | 500 | DO-35 |
| 22 | 1N4731A | 4.3 | 5 | 9.0 | 58 | 10 | 1.0 | - | 1000 | DO-41 |
| 23 | BZX85C4V3 | 4.3 | 5 | 13 | 50 | 3.0 | 1.0 | 020 | 1000 | DO-41 |
| 24 | 1N750A | 4.7 | 5 | 19 | 20 | 2.0 | 1.0 | ±.043 | 500 | DO-35 |
| 25 | 1N5230B | 4.7 | 5 | 19 | 20 | 5.0 | 2.0 | (±.030) | 500 | DO-35 |
| 26 | BZX55C4V7 | 4.7 | 5 | 60 | 5.0 | 30 | 1.5 | 020 | 500 | DO-35 |
| 27 | BZY88C4V7 | 4.7 | 5 | 17 | 20 | 3.0 | 2.0 | (032) | 500 | DO-35 |
| 28 | ZPD4,7 | 4.7 | 5 | 78 | 5.0 | _ | -8 | (050) | 500 | DO-35 |
| 29 | 1N4732A | 4.7 | 5 | 8.0 | 53 | 10 | 1.0 | | 1000 | DO-41 |
| 30 | BZX85C4V7 | 4.7 | 5 | 13 | 45 | 3.0 | 1.5 | +.005 | 1000 | DO-41 |
| 31 | 1N751A | 5.1 | 5 | 17 | 20 | 1.0 | 1.0 | ±.030 | 500 | DO-35 |

^{*}Tolerance: All zener diodes are also available in $\pm 1\%$, $2\pm\%$, $\pm 10\%$ and $\pm 20\%$ tolerances.

DIODES

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±Vz % | $\mathbf{Z}_{\mathbf{Z}}$ Ω Max | @ Iz mA | IR μA Max | ν _R @ ν | T.C. %/°C Typ (Max) | PD mW T _A =25°C | Package No. |
|------|---------------|----------------------------|-------------------|--|------------|-----------------|-----------------------|---------------------------|----------------------------------|----------------|
| 1 | 1N5231B | 5.1 | 5 | 17 | 20 | 5.0 | 2.0 | (±.030) | 500 | DO-35 |
| 2 | BZX55C5V1 | 5.1 | 5 | 35 | 5.0 | 2.0 | 1.0 | +.010 | 500 | DO-35 |
| 3 | BZY88C5V1 | 5.1 | 5 | 11 | 20 | 1.0 | 2.0 | (030) | 500 | DO-35 |
| 4 | ZPD5,1 | 5.1 | 5 | 60 | 5.0 | 0.1 | 0.8 | (+.040) | 500 | DO-35 |
| 5 | 1N4733A | 5.1 | 5 | 7.0 | 49 | 10 | 1.0 | 0-2 | 1000 | DO-41 |
| 6 | BZX85C5V1 | 5.1 | 5 | 10 | 45 | 1.0 | 2.0 | +.010 | 1000 | DO-41 |
| 7 | 1N752A | 5.6 | 5 | . 11 | 20 | 1.0 | 1.0 | +.028 | 500 | DO-35 |
| 8 | 1N5232B | 5.6 | 5 | 11 | 20 | 5.0 | 3.0 | (±.038) | 500 | DO-35 |
| 9 | BZX55C5V6 | 5.6 | 5 | 25 | 5.0 | 2.0 | 1.0 | +.025 | 500 | DO-35 |
| 10 | BZY88C5V6 | 5.6 | 5 | 8 | 20 | 1.0 | 2.0 | (+.054) | 500 | DO-35 |
| 11 | ZPD5,6 | 5.6 | 5 | 40 | 5.0 | 0.1 | 1.0 | (+.060) | 500 | DO-35 |
| 12 | 1N4734A | 5.6 | 5 | 5.0 | 45 | 10 | 2.0 | 1 | 1000 | DO-41 |
| 13 | BZX85C5V6 | 5.6 | 5 | 7.0 | 45 | 1.0 | 2.0 | +.025 | 1000 | DO-41 |
| 14 | 1N5233B | 6.0 | 5 | 7.0 | 20 | 5.0 | 3.5 | (+.038) | 500 | DO-35 |
| 15 | 1N753A | 6.2 | 5 | 7.0 | 20 | 0.1 | 1.0 | +.045 | 500 | DO-35 |
| 16 | 1N5234B | 6.2 | 5 | 7.0 | 20 | 5.0 | 4.0 | (+.045) | 500 | DO-35 |
| 17 | BZX55C6V2 | 6.2 | 5 | 10 | 5.0 | 2.0 | 2.0 | +.032 | 500 | DO-35 |
| 18 | BZY88C6V2 | 6.2 | 5 | 3.1 | 20 | 1.0 | 2.0 | (+.065) | 500 | DO-35 |
| 19 | ZPD6,2 | 6.2 | 5 | 10 | 5.0 | 0.1 | 2.0 | (+.070) | 500 | DO-35 |
| 20 | 1N4735A | 6.2 | 5 | 2.0 | 41 | 10 | 3.0 | - | 1000 | DO-41 |
| 21 | BZX85C6V2 | 6.2 | 5 | 4.0 | 35 | 1.0 | 3.0 | +.032 | 1000 | DO-41 |
| 22 | 1N754A | 6.8 | 5 | 5.0 | 20 | 0.1 | 1.0 | +.050 | 500 | DO-35 |
| 23 | 1N957B | 6.8 | 5 | 4.5 | 18.5 | 150 | 5.2 | +.050 | 500 | DO-35 |
| 24 | 1N5235B | 6.8 | 5 | 5.0 | 20 | 3.0 | 5.0 | (+.050) | 500 | DO-35 |
| 25 | BZX55C6V8 | 6.8 | 5 | 8.0 | 5.0 | 2.0 | 3.0 | +.040 | 500 | DO-35 |
| 26 | BZY88C6V8 | 6.8 | 5 | 3.0 | 20 | 1.0 | 3.0 | (+.070) | 500 | DO-35 |
| 27 | ZPD6,8 | 6.8 | 5 | 8.0 | 5.0 | 0.1 | 3.0 | (+.070) | 500 | DO-35 |
| 28 | 1N4736A | 6.8 | 5 | 3.5 | 37 | 10 | 4.0 | 7+ | 1000 | DO-41 |
| 29 | BZX85C6V8 | 6.8 | 5 | 3.5 | 35 | 1.0 | 4.0 | +.040 | 1000 | DO-41 |
| 30 | 1N755A | 7.5 | 5 | 6.0 | 20 | 0.1 | 1.0 | +.058 | 500 | DO-35 |

^{*}Tolerance: All zener diodes are also available in ±1%, ±2%, ±10%, and ±20% tolerances.

DIODES

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±VZ % | Z _Z Ω Max | @ IZ mA | IR μA (Max | © VR | T.C. %/°C Typ (Max) | P _D mW T _A =25°C | Package No. |
|------|---------------|----------------------------|-------------------|----------------------------|------------|-------------------|------|---------------------------|--|----------------|
| 1 | 1N958B | 7.5 | 5 | 5.5 | 16.5 | 75 | 5.7 | +.058 | 500 | DO-35 |
| 2 | 1N5236B | 7.5 | 5 | 6.0 | 20 | 3.0 | 6.0 | (+.058) | 500 | DO-35 |
| 3 | BZX55C7V5 | 7.5 | 5 | 7.0 | 5.0 | 2.0 | 5.0 | +.045 | 500 | DO-35 |
| 4 | BZY88C7V5 | 7.5 | 5 | 5.0 | 20 | 0.5 | 3.0 | (+.079) | 500 | DO-35 |
| 5 | ZPD7,5 | 7.5 | 5 | 7.0 | 5.0 | 0.1 | 5.0 | (+.070) | 500 | DO-35 |
| 6 | 1N4737A | 7.5 | 5 | 4.0 | 34 | 10 | 5.0 | | 1000 | DO-41 |
| 7 | BZX85C7V5 | 7.5 | 5 | 3.0 | 35 | 1.0 | 4.5 | +.045 | 1000 | DO-41 |
| 8 | 1N756A | 8.2 | 5 | 8.0 | 20 | 0.1 | 1.0 | +.062 | 500 | DO-35 |
| 9 | 1N959B | 8.2 | 5 | 6.5 | 15 | 50 | 6.2 | +.062 | 500 | DO-35 |
| 10 | 1N5237B | 8.2 | 5 | 8.0 | 20 | 3.0 | 6.5 | (+.062) | 500 | DO-35 |
| 11 | BZX55C8V2 | 8.2 | 5 | 7.0 | 5.0 | 2.0 | 6.0 | +.048 | 500 | DO-35 |
| 12 | BZY88C8V2 | 8.2 | 5 ° | 6.0 | 20 | 0.4 | 3.0 | (+.073) | 500 | DO-35 |
| 13 | ZPD8,2 | 8.2 | 5 | 7.0 | 5.0 | 0.1 | 6.0 | (+.070) | 500 | DO-35 |
| 14 | 1N4738A | 8.2 | 5 | 4.5 | 31 | 10 | 6.0 | | 1000 | DO-41 |
| 15 | BZX85C8V2 | 8.2 | 5 | 5.0 | 25 | 1.0 | 5.0 | +.048 | 1000 | DO-41 |
| 16 | 1N5238B | 8.7 | 5 | 8.0 | 20 | 3.0 | 6.5 | (+.065) | 500 | DO-35 |
| 17 | 1N757A | 9.1 | 5 | 10 | 20 | 0.1 | 1.0 | +.068 | 500 | DO-35 |
| 18 | 1N960B | 9.1 | 5 | 7.5 | 14 | 25 | 6.9 | +.068 | 500 | DO-35 |
| 19 | 1N5239B | 9.1 | 5 | 10 | 20 | 3.0 | 7.0 | (+.068) | 500 | DO-35 |
| 20 | BZX55C9V1 | 9.1 | 5 | 10 | 5.0 | 2.0 | 7.0 | +.050 | 500 | DO-35 |
| 21 | BZY88C9V1 | 9.1 | 5 | 7.0 | 20 | 0.4 | 5.0 | (+.077) | 500 | DO-35 |
| 22 | ZPD9,1 | 9.1 | 5 | 10 | 5.0 | 0.1 | 7.0 | (+.080) | 500 | DO-35 |
| 23 | 1N4739A | 9.1 | 5 | 5.0 | 28 | 10 | 7.0 | _ | 1000 | DO-41 |
| 24 | BZX85C9V1 | 9.1 | 5 | 5.0 | 25 | 1.0 | 6.5 | +.051 | 1000 | DO-41 |
| 25 | 1N758A | 10 | 5 | 17 | 20 | 0.1 | 1.0 | +.075 | 500 | DO-35 |
| 26 | 1N961B | 10 | 5 | 8.5 | 12.5 | 10 | 7.6 | +.072 | 500 | DO-35 |
| 27 | 1N5240B | 10 | 5 | 17 | 20 | 3.0 | 8.0 | (+.075) | 500 | DO-35 |
| 28 | BZX55C10 | 10 | 5 | 15 | 5.0 | 2.0 | 7.5 | +.055 | 500 | DO-35 |
| 29 | BZY88C10 | 10 | 5 | 25 | 5.0 | 2.5 | 6.7 | (+.072) | 500 | DO-35 |
| 30 | ZPD10 | 10 | 5 | 15 | 5.0 | 0.1 | 7.5 | (+.080) | 500 | DO-35 |

^{*}Tolerance: All zener diodes are also available in $\pm 1\%$, $\pm 2\%$, $\pm 10\%$ and $\pm 20\%$ tolerances.

DIODES

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±VZ % | Z _Z Ω Max | @ IZ mA | I _R μA Max | @ VR | T.C. %/°C Typ (Max) | PD mW T _A =25°C | Package No. |
|------|---------------|----------------------------|-------------------|----------------------------|------------|-----------------------------|-------|---------------------------|----------------------------------|----------------|
| 1 | 1N4740A | 10 | 5 | 7.0 | 25 | 10 | 7.6 | 92 | 1000 | DO-41 |
| 2 | BZX85C10 | 10 | 5 | 7.0 | 25 | 0.5 | 7.0 | +.055 | 1000 | DO-41 |
| 3 | 1N962B | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 500 | DO-35 |
| 4 | 1N5241B | 11 | 5 | 22 | 20 | 2.0 | 8.4 | (+.076) | 500 | DO-35 |
| 5 | BZX55C11 | 11 | 5 | 20 | 5.0 | 2.0 | 8.5 | +.060 | 500 | DO-35 |
| 6 | BZY88C11 | 11 | 5 | 35 | 5.0 | 2.5 | 7.37 | (+.073) | 500 | DO-35 |
| 7 | ZPD11 | 11 | 5 | 20 | 5.0 | 0.1 | 8.5 | (+.090) | 500 | DO-35 |
| 8 | 1N4741A | 11 | 5 | 8.0 | 23 | 5.0 | 8.4 | 9.8 | 1000 | DO-41 |
| 9 | BZX85C11 | 11 | 5 | 8.0 | 20 | 0.5 | 7.7 | +.060 | 1000 | DO-41 |
| 10 | 1N759A | 12 | 5 | 30 | 20 | 0.1 | 1.0 | +.077 | 500 | DO-35 |
| 11 | 1N963B | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 500 | DO-35 |
| 12 | 1N5242B | 12 | 5 | 30 | 20 | 1.0 | 9.1 | (+.077) | 500 | DO-35 |
| 13 | BZX55C12 | 12 | 5 | 20 | 5.0 | 2.0 | 9.0 | +.065 | 500 | DO-35 |
| 14 | BZY88C12 | 12 | 5 | 35 | 5.0 | 2.5 | 8.04 | (+.076) | 500 | DO-35 |
| 15 | ZPD12 | 12 | 5 | 20 | 5.0 | 0.1 | 9.0 | (+.090) | 500 | DO-35 |
| 16 | 1N4742A | 12 | 5 | 9.0 | 21 | 5.0 | 9.1 | <u>_8</u> | 1000 | DO-41 |
| 17 | BZX85C12 | 12 | 5 | 9.0 | 20 | 0.5 | 8.4 | +.065 | 1000 | DO-41 |
| 18 | 1N964B | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 500 | DO-35 |
| 19 | 1N5243B | 13 | 5 | 13 | 9.5 | 0.5 | 9.9 | (+.079) | 500 | DO-35 |
| 20 | BZX55C13 | 13 | 5 | 26 | 5.0 | 2.0 | 10 | +.070 | 500 | DO-35 |
| 21 | BZY88C13 | 13 | 5 | 35 | 5.0 | 2.5 | 8.71 | (+.079) | 500 | DO-35 |
| 22 | ZPD13 | 13 | 5 | 25 | 5.0 | 0.1 | 10 | (+.090) | 500 | DO-35 |
| 23 | 1N4743A | 13 | 5 | 10 | 19 | 5.0 | 9.9 | 120 | 1000 | DO-41 |
| 24 | BZX85C13 | 13 | 5 | 10 | 20 | 0.5 | 9.1 | +.065 | 1000 | DO-41 |
| 25 | 1N5244B | 14 | 5 | 15 | 9.0 | 0.1 | 10 | (+.082) | 500 | DO-35 |
| 26 | 1N965B | 15 | 5 | 16 | 8.5 | 5.0 | 11.4 | +.082 | 500 | DO-35 |
| 27 | 1N5245B | 15 | 5 | 16 | 8.5 | 0.1 | 11 | (+.082) | 500 | DO-35 |
| 28 | BZX55C15 | 15 | 5 | 30 | 5.0 | 2.0 | 11 | +.070 | 500 | DO-35 |
| 29 | BZY88C15 | 15 | 5 | 40 | 5.0 | 2.5 | 10.05 | (+.082) | 500 | DO-35 |
| 30 | ZPD15 | 15 | 5 | 30 | 5.0 | 0.1 | 11 | (+.090) | 500 | DO-35 |

^{*}Tolerance: All zener diodes are also available in $\pm 1\%$, $\pm 2\%$, $\pm 10\%$ and $\pm 20\%$ tolerances.

DIODES

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±VZ % | $\mathbf{Z}_{\mathbf{Z}}$ Ω Max | @ IZ mA | I _R μA Max | @ V | T.C. %/°C Typ (Max) | P _D mW T _A =25°C | Package No. |
|------|---------------|----------------------------|-------------------|--|------------|-----------------------------|-------|---------------------------|--|----------------|
| 1 | 1N4744A | 15 | 5 | 14 | 17 | 5.0 | 11.4 | _ | 1000 | DO-41 |
| 2 | BZX85C15 | 15 | 5 | 15 | 15 | 0.5 | 10.5 | +.070 | 1000 | DO-41 |
| 3 | 1N966B | 16 | 5 | 17 | 7.8 | 5.0 | 12.2 | +.083 | 500 | DO-35 |
| 4 | 1N5246B | 16 | 5 | 17 | 7.8 | 0.1 | 12 | (+.083) | 500 | DO-35 |
| 5 | BZX55C16 | 16 | 5 | 40 | 5.0 | 2.0 | 12 | +.075 | 500 | DO-35 |
| 6 | BZY88C16 | 16 | 5 | 45 | 5.0 | 2.5 | 10.72 | (+.083) | 500 | DO-35 |
| 7 | ZPD16 | 16 | 5 | 40 | 5.0 | 0.1 | 12 | (+.095) | 500 | DO-35 |
| 8 | 1N4745A | 16 | 5 | 16 | 15.5 | 5.0 | 12.2 | _ | 1000 | DO-41 |
| 9 | BZX85C16 | 16 | 5 | 15 | 15 | 0.5 | 11.0 | +.070 | 1000 | DO-41 |
| 10 | 1N5247B | 17 | 5 | 19 | 7.4 | 0.1 | 13 | (+.084) | 500 | DO-35 |
| 11 | 1N967B | 18 | 5 | 21 | 7.0 | 5.0 | 13.7 | +.085 | 500 | DO-35 |
| 12 | 1N5248B | 18 | 5 | 21 | 7.0 | 0.1 | 14 | (+.085) | 500 | DO-35 |
| 13 | BZX55C18 | 18 | 5 | 55 | 5.0 | 2.0 | 14 | +.075 | 500 | DO-35 |
| 14 | BZY88C18 | 18 | 5 | 50 | 5.0 | 2.5 | 12.06 | (+.085) | 500 | DO-35 |
| 15 | ZPD18 | 18 | 5 | 50 | 5.0 | 0.1 | 14 | (+.095) | 500 | DO-35 |
| 16 | 1N4746A | 18 | 5 | 20 | 14 | 5.0 | 13.7 | | 1000 | DO-41 |
| 17 | BZX85C18 | 18 | 5 | 20 | 15 | 0.5 | 12.5 | +.075 | 1000 | DO-41 |
| 18 | 1N5249B | 19 | 5 | 23 | 6.6 | 0.1 | 14 | (+.086) | 500 | DO-35 |
| 19 | 1N968B | 20 | 5 | 25 | 6.2 | 5.0 | 15.2 | +.086 | 500 | DO-35 |
| 20 | 1N5250B | 20 | 5 | 25 | 6.2 | 0.1 | 15 | (+.086) | 500 | DO-35 |
| 21 | BZX55C20 | 20 | 5 | 55 | 5.0 | 2.0 | 15 | +.080 | 500 | DO-35 |
| 22 | BZY88C20 | 20 | 5 | 60 | 5.0 | 2.5 | 13.4 | (+.086) | 500 | DO-35 |
| 23 | ZPD20 | 20 | 5 | 50 | 5.0 | 0.1 | 15 | (+.100) | 500 | DO-35 |
| 24 | 1N4747A | 20 | 5 | 22 | 12.5 | 5.0 | 15.2 | -8 | 1000 | DO-41 |
| 25 | BZX85C20 | 20 | 5 | 24 | 10 | 0.5 | 14 | +.075 | 1000 | DO-41 |
| 26 | 1N969B | 22 | 5 | 29 | 5.6 | 5.0 | 16.7 | +.087 | 500 | DO-35 |
| 27 | 1N5251B | 22 | 5 | 29 | 5.6 | 0.1 | 17 | (+.087) | 500 | DO-35 |
| 28 | BZX55C22 | 22 | 5 | 55 | 5.0 | 2.0 | 17 | +.080 | 500 | DO-35 |
| 29 | BZY88C22 | 22 | 5 | 65 | 5.0 | 2.5 | 14.74 | (+.087) | 500 | DO-35 |
| 30 | ZPD22 | 22 | 5 | 55 | 5.0 | 0.1 | 17 | (+.100) | 500 | DO-35 |
| 31 | 1N4748A | 22 | 5 | 23 | 11.5 | 5.0 | 16.7 | -08 | 1000 | DO-41 |

^{*}Tolerance: All zener diodes are also available in ±1%, ±2%, ±10% and ±20% tolerances.

DIODES

| Item | DEVICE NO. | V _Z V Nom | Tol.* ±VZ % | Z _Z Ω Max | @ IZ mA | I _R μA Max | @ V | T.C. %/°C Typ (Max) | P _D mW T _A =25°C | Package No. |
|------|---------------|----------------------------|-------------|----------------------------|------------|-----------------------------|-------|---------------------------|--|----------------|
| 1 | BZX85C22 | 22 | 5 | 25 | 10 | 0.5 | 15.5 | +.080 | 1000 | DO-41 |
| 2 | 1N970B | 24 | 5 | 33 | 5.2 | 5.0 | 18.2 | +.088 | 500 | DO-35 |
| 3 | 1N5252B | 24 | 5 | 33 | 5.2 | 0.1 | 18 | (+.088) | 500 | DO-35 |
| 4 | BZX55C24 | 24 | 5 | 80 | 5.0 | 2.0 | 18 | +.085 | 500 | DO-35 |
| 5 | BZY88C24 | 24 | 5 | 75 | 5.0 | 2.5 | 16.08 | (+.088) | 500 | DO-35 |
| 6 | ZPD24 | 24 | 5 | 80 | 5.0 | 0.1 | 18 | (+.100) | 500 | DO-35 |
| 7 | 1N4749A | 24 | 5 | 25 | 10.5 | 5.0 | 18.2 | | 1000 | DO-41 |
| 8 | BZX85C24 | 24 | 5 | 25 | 10 | 0.5 | 17 | +.080 | 1000 | DO-41 |
| 9 | 1N5253B | 25 | 5 | 35 | 5.0 | 0.1 | 19 | (+.089) | 500 | DO-35 |
| 10 | 1N971B | 27 | 5 | 41 | 4.6 | 5.0 | 20.6 | +.090 | 500 | DO-35 |
| 11 | 1N5254B | 27 | 5 | 41 | 4.6 | 0.1 | 21 | (+.090) | 500 | DO-35 |
| 12 | BZX55C27 | 27 | 5 | 80 | 5.0 | 2.0 | 20 | +.085 | 500 | DO-35 |
| 13 | BZY88C27 | 27 | 5 | 85 | 5.0 | 2.5 | 18.09 | (+.090) | 500 | DO-35 |
| 14 | ZPD27 | 27 | 5 | 80 | 5.0 | 0.1 | 20 | (+.100) | 500 | DO-35 |
| 15 | 1N4750A | 27 | 5 | 35 | 9.5 | 5.0 | 20.6 | 41 | 1000 | DO-41 |
| 16 | BZX85C27 | 27 | 5 | 30 | 8.0 | 0.5 | 19 | +.085 | 1000 | DO-41 |
| 17 | 1N5255B | 28 | 5 | 44 | 4.5 | 0.1 | 21 | (+.091) | 500 | DO-35 |
| 18 | 1N972B | 30 | 5 | 49 | 4.2 | 5.0 | 22.8 | +.091 | 500 | DO-35 |
| 19 | 1N5256B | 30 | 5 | 49 | 4.2 | 0.1 | 23 | (+.091) | 500 | DO-35 |
| 20 | BZX55C30 | 30 | 5 | 80 | 5.0 | 2.0 | 22 | +.085 | 500 | DO-35 |
| 21 | BZY88C30 | 30 | 5 | 95 | 5.0 | 2.5 | 20.1 | (+.091) | 500 | DO-35 |
| 22 | ZPD30 | 30 | 5 | 80 | 5.0 | 0.1 | 22.5 | (+.100) | 500 | DO-35 |
| 23 | 1N4751A | 30 | 5 | 40 | 8.5 | 5.0 | 22.8 | | 1000 | DO-41 |
| 24 | BZX85C30 | 30 | 5 | 30 | 8.0 | 0.5 | 21 | +.085 | 1000 | DO-41 |
| 25 | 1N973B | 33 | 5 | 58 | 3.8 | 5.0 | 25.1 | +.092 | 500 | DO-35 |
| 26 | 1N5257B | 33 | 5 | 58 | 3.8 | 0.1 | 25 | (+.092) | 500 | DO-35 |
| 27 | BZX55C33 | 33 | 5 | 80 | 5.0 | 2.0 | 24 | +.085 | 500 | DO-35 |
| 28 | BZY88C33 | 33 | 5 | 120 | 5.0 | 2.5 | 21 | (+.100) | 500 | DO-35 |
| 29 | ZPD33 | 33 | 5 | 80 | 5.0 | 0.1 | 25 | (+.100) | 500 | DO-35 |
| 30 | 1N4752A | 33 | 5 | 45 | 7.5 | 5.0 | 25.1 | s | 1000 | DO-41 |
| 31 | BZX85C33 | 33 | 5 | 35 | 8.0 | 0.5 | 23 | +.085 | 1000 | DO-41 |

^{*}Tolerance: All zener diodes are also available in $\pm 1\%$, $\pm 2\%$, $\pm 10\%$ and $\pm 20\%$ tolerances.

DIODES

MILITARY QUALIFIED ZENER DIODES (BY ASCENDING VZ) GLASS PACKAGE

| Item | DEVICE NO. | V _Z V Nom | Tol. ±VZ % | Z _Z Ω Max | @ IZ mA | IR μA Max | VR ⊕ V | T.C. %/°C Max | PD mW TA=25°C | Package No. |
|------|----------------|----------------------------|------------------|----------------------------|------------|-----------------|-----------|---------------------|---------------------|----------------|
| 1 | 1N747AJAN | 3.6 | 5 | 22 | 20 | 3.0 | 1.0 | 065 | 400 | DO-7 |
| 2 | 1N747AJANTX | 3.6 | 5 | 22 | 20 | 3.0 | 1.0 | 065 | 400 | DO-7 |
| 3 | 1N747AJANTXV | 3.6 | 5 | 22 | 20 | 3.0 | 1.0 | 065 | 400 | DO-7 |
| 4 | 1N748AJAN | 3.9 | 5 | 20 | 20 | 2.0 | 1.0 | 060 | 400 | DO-7 |
| 5 | 1N748AJANTX | 3.9 | 5 | 20 | 20 | 2.0 | 1.0 | 060 | 400 | DO-7 |
| 6 | 1N748AJANTXV | 3.9 | 5 | 20 | 20 | 2.0 | 1.0 | 060 | 400 | DO-7 |
| 7 | 1N749AJAN | 4.3 | 5 | 18 | 20 | 2.0 | 1.0 | 055 | 400 | DO-7 |
| 8 | 1N749AJANTX | 4.3 | 5 | 18 | 20 | 2.0 | 1.0 | 055 | 400 | DO-7 |
| 9 | 1N749AJANTX | 4.3 | 5 | 18 | 20 | 2.0 | 1.0 | 055 | 400 | DO-7 |
| 10 | 1N750AJAN | 4.7 | 5 | 16 | 20 | 5.0 | 1.5 | 043 | 400 | DO-7 |
| 11 | 1N750AJANTX | 4.7 | 5 | 16 | 20 | 5.0 | 1.5 | 043 | 400 | DO-7 |
| 12 | 1N750AJANTXV | 4.7 | 5 | 16 | 20 | 5.0 | 1.5 | 043 | 400 | DO-7 |
| 13 | 1N751AJAN | 5.1 | 5 | 14 | 20 | 5.0 | 2.0 | ±.030 | 400 | DO-7 |
| 14 | 1N751AJANTX | 5.1 | 5 | 14 | 20 | 5.0 | 2.0 | ±.030 | 400 | DO-7 |
| 15 | 1N751AJANTXV | 5.1 | 5 | 14 | 20 | 5.0 | 2.0 | ±.030 | 400 | DO-7 |
| 16 | 1N752AJAN | 5.6 | 5 | 8.0 | 20 | 5.0 | 2.5 | +.032 | 400 | DO-7 |
| 17 | 1N752AJANTX | 5.6 | 5 | 8.0 | 20 | 5.0 | 2.5 | +.032 | 400 | DO-7 |
| 18 | 1N752AJANTXV | 5.6 | 5 | 8.0 | 20 | 5.0 | 2.5 | +.032 | 400 | DO-7 |
| 19 | 1N962BJAN | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 400 | DO-35 |
| 20 | 1N962BJANTX | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 400 | DO-35 |
| 21 | 1N962BJANTXV | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 400 | DO-35 |
| 22 | 1N962B-1JAN | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 400 | DO-35 |
| 23 | 1N962B-1JANTX | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 400 | DO-35 |
| 24 | 1N962B-1JANTXV | 11 | 5 | 9.5 | 11.5 | 5.0 | 8.4 | +.073 | 400 | DO-35 |
| 25 | 1N963BJAN | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 400 | DO-35 |
| 26 | 1N963BJANTX | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 400 | DO-35 |
| 27 | 1N963BJANTXV | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 400 | DO-35 |
| 28 | 1N963B-1JAN | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 400 | DO-35 |
| 29 | 1N963B-1JANTX | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 400 | DO-35 |
| 30 | 1N963B-1JANTXV | 12 | 5 | 11.5 | 10.5 | 5.0 | 9.1 | +.076 | 400 | DO-35 |
| 31 | 1N964BJAN | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 400 | DO-35 |
| 32 | 1N964BJANTX | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 400 | DO-35 |

DIODES

MILITARY QUALIFIED ZENER DIODES (BY ASCENDING VZ) (Cont'd)

GLASS PACKAGE

| Item | DEVICE NO. | V _Z V Nom | Tol. ±VZ % | Z _Z Ω Max | @ IZ mA | IR μA Max | @ V _R V | T.C. %/°C Max | PD mW T A=25°C | Package No. |
|------|----------------|----------------------------|------------------|----------------------------|------------|-----------------|--------------------|---------------------|----------------------|----------------|
| 1 | 1N964BJANTXV | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 400 | DO-35 |
| 2 | 1N964B-1JAN | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 400 | DO-35 |
| 3 | 1N964B-1JANTX | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 400 | DO-35 |
| 4 | 1N964B-1JANTXV | 13 | 5 | 13 | 9.5 | 5.0 | 9.9 | +.079 | 400 | DO-35 |
| 5 | 1N965BJAN | 15 | 5 | 16 | 8.5 | 5.0 | 11 | +.082 | 400 | DO-35 |
| 6 | 1N965BJANTX | 15 | 5 | 16 | 8.5 | 5.0 | 6 11 | +.082 | 400 | DO-35 |
| 7 | 1N965BJANTXV | 15 | 5 | 16 | 8.5 | 5.0 | ₫ 11€ | +.082 | 400 | DO-35 |
| 8 | 1N965B-1JAN | 15 | 5 | 16 | 8.5 | 5.0 | 8 11 8 | +.082 | 400 | DO-35 |
| 9 | 1N965B-1JANTX | 15 | 5 | 16 | 8.5 | 5.0 | 11 | +.082 | 400 | DO-35 |
| 10 | 1N965B-1JANTXV | 15 | 5 | 16 | 8.5 | 5.0 | 11 | +.082 | 400 | DO-35 |
| 11 | 1N966BJAN | 16 | 5 | 17 | 7.8 | 5.0 | 12 | +.083 | 400 | DO-35 |
| 12 | 1N966BJANTX | 16 | 5 | 17 | 7.8 | 5.0 | 12 | +.083 | 400 | DO-35 |
| 13 | 1N966BJANTXV | 16 | 5 | 17 | 7.8 | 5.0 | 12 | +.083 | 400 | DO-35 |
| 14 | 1N966B-1JAN | 16 | 5 | 17 | 7.8 | 5.0 | 12 | +.083 | 400 | DO-35 |
| 15 | 1N966B-1JANTX | 16 | 5 | 17 | 7.8 | 5.0 | 12 | +.083 | 400 | DO-35 |
| 16 | 1N966B-1JANTXV | 16 | 5 | 17 | 7.8 | 5.0 | 12 | +.083 | 400 | DO-35 |
| 17 | 1N967BJAN | 18 | 5 | 21 | 7.0 | 5.0 | 14 | +.085 | 400 | DO-35 |
| 18 | 1N967BJANTX | 18 | 5 | 21 | 7.0 | 5.0 | 14 | +.085 | 400 | DO-35 |
| 19 | 1N967BJANTXV | 18 | 5 | 21 | 7.0 | 5.0 | 14 | +.085 | 400 | DO-35 |
| 20 | 1N967B-1JAN | 18 | 5 | 21 | 7.0 | 5.0 | 14 | +.085 | 400 | DO-35 |
| 21 | 1N967B-1JANTX | 18 | 5 | 21 | 7.0 | 5.0 | 14 | +.085 | 400 | DO-35 |
| 22 | 1N967B-1JANTXV | 18 | 5 | 21 | 7.0 | 5.0 | 14 | +.085 | 400 | DO-35 |
| 23 | 1N968BJAN | 20 | 5 | 25 | 6.2 | 5.0 | 15 | +.086 | 400 | DO-35 |
| 24 | 1N968BJANTX | 20 | 5 | 25 | 6.2 | 5.0 | 15 | +.086 | 400 | DO-35 |
| 25 | 1N968BJANTXV | 20 | 5 | 25 | 6.2 | 5.0 | 15 | +.086 | 400 | DO-35 |
| 26 | 1N968B-1JAN | 20 | 5 | 25 | 6.2 | 5.0 | 15 | +.086 | 400 | DO-35 |
| 27 | 1N968B-1JANTX | 20 | 5 | 25 | 6.2 | 5.0 | 15 | +.086 | 400 | DO-35 |
| 28 | 1N968B-1JANTXV | 20 | 5 | 25 | 6.2 | 5.0 | 15 | +.086 | 400 | DO-35 |
| 29 | 1N969BJAN | 22 | 5 | 29 | 5.6 | 5.0 | 17 | +.087 | 400 | DO-35 |
| 30 | 1N969BJANTX | 22 | 5 | 29 | 5.6 | 5.0 | 17 | +.087 | 400 | DO-35 |
| 31 | 1N969BJANTXV | 22 | 5 | 29 | 5.6 | 5.0 | 17 | +.087 | 400 | DO-35 |
| 32 | 1N969B-1JAN | 22 | 5 | 29 | 5.6 | 5.0 | 17 | +.087 | 400 | DO-35 |

DIODES

MILITARY QUALIFIED ZENER DIODES (BY ASCENDING VZ) (Cont'd) GLASS PACKAGE

| Item | DEVICE NO. | VZ V Nom | Tol. ±VZ % | Z _Z Ω Max | @ IZ mA | IR μA Max | @ V _R V | T.C. %/°C Max | P _D mW T _A =25°C | Package No. |
|------|----------------|----------------|------------------|----------------------------|------------|-----------------|--------------------|---------------------|--|----------------|
| 1 | 1N969B-1JANTX | 22 | 5 | 29 | 5.6 | 5.0 | 17 | +.087 | 400 | DO-35 |
| 2 | 1N969B-1JANTXV | 22 | 5 | 29 | 5.6 | 5.0 | 17 | +.087 | 400 | DO-35 |
| 3 | 1N970BJAN | 24 | 5 | 33 | 5.2 | 5.0 | 18 | +.088 | 400 | DO-35 |
| 4 | 1N970BJANTX | 24 | 5 | 33 | 5.2 | 5.0 | 18 | +.088 | 400 | DO-35 |
| 5 | 1N970BJANTXV | 24 | 5 | 33 | 5.2 | 5.0 | 18 | +.088 | 400 | DO-35 |
| 6 | 1N970B-1JAN | 24 | 5 | 33 | 5.2 | 5.0 | 18 | +.088 | 400 | DO-35 |
| 7 | 1N970B-1JANTX | 24 | 5 | 33 | 5.2 | 5.0 | 18 | +.088 | 400 | DO-35 |
| 8 | 1N970B-1JANTXV | 24 | 5 | 33 | 5.2 | 5.0 | 18 | +.088 | 400 | DO-35 |
| 9 | 1N971BJAN | 27 | 5 | 41 | 4.6 | 5.0 | 21 | +.090 | 400 | DO-35 |
| 10 | 1N971BJANTX | 27 | 5 | 41 | 4.6 | 5.0 | 21 | +.090 | 400 | DO-35 |
| 11 | 1N971BJANTXV | 27 | 5 | 41 | 4.6 | 5.0 | 21 | +.090 | 400 | DO-35 |
| 12 | 1N971B-1JAN | 27 | 5 | 41 | 4.6 | 5.0 | 21 | +.090 | 400 | DO-35 |
| 13 | 1N971B-1JANTX | 27 | 5 | 41 | 4.6 | 5.0 | 21 | +.090 | 400 | DO-35 |
| 14 | 1N971B-1JANTXV | 27 | 5 | 41 | 4.6 | 5.0 | 21 | +.090 | 400 | DO-35 |
| 15 | 1N972BJAN | 30 | 5 | 49 | 4.2 | 5.0 | 23 | +.091 | 400 | DO-35 |
| 16 | 1N972BJANTX | 30 | 5 | 49 | 4.2 | 5.0 | 23 | +.091 | 400 | DO-35 |
| 17 | 1N972BJANTXV | 30 | 5 | 49 | 4.2 | 5.0 | 23 | +.091 | 400 | DO-35 |
| 18 | 1N972B-1JAN | 30 | 5 | 49 | 4.2 | 5.0 | 23 | +.091 | 400 | DO-35 |
| 19 | 1N972B-1JANTX | 30 | 5 | 49 | 4.2 | 5.0 | 23 | +.091 | 400 | DO-35 |
| 20 | 1N972B-1JANTXV | 30 | 5 | 49 | 4.2 | 5.0 | 23 | +.091 | 400 | DO-35 |
| 21 | 1N973BJAN | 33 | 5 | 58 | 3.8 | 5.0 | 25 | +.092 | 400 | DO-35 |
| 22 | 1N973BJANTX | 33 | 5 | 58 | 3.8 | 5.0 | 25 | +.092 | 400 | DO-35 |
| 23 | 1N973BJANTXV | 33 | 5 | 58 | 3.8 | 5.0 | 25 | +.092 | 400 | DO-35 |
| 24 | 1N973B-1JAN | 33 | 5 | 58 | 3.8 | 5.0 | 25 | +.092 | 400 | DO-35 |
| 25 | 1N973B-1JANTX | 33 | 5 | 58 | 3.8 | 5.0 | 25 | +.092 | 400 | DO-35 |
| 26 | 1N973B-1JANTXV | 33 | 5 | 58 | 3.8 | 5.0 | 25 | +.092 | 400 | DO-35 |

DIODES

MATCHED DIODE ASSEMBLIES

PLASTIC AND GLASS PACKAGES

| Numb | | 0.7 519 0.20 V 408 0.01 V | D SI | 2 Moulded Pair (308) | Discrete Pair DO-7 or DO-35 | 4 Moulded Quad (310) | Discrete Quad DO-7 or DO-35 | 4 Moulded Bridge (309) |
|------|---|------------------------------------|--------------------|-------------------------------|-----------------------------|-------------------------------|-----------------------------|---------------------------------|
| Item | V _F Matching Basic Diode Specification | (-55°C to +1 IF Range mA | 00°C) ΔVF mV | DEVICE NO. | DEVICE NO. | DEVICE NO. | DEVICE NO. | DEVICE NO. |
| 1 | 1N914 | 0.01-1.0 | 3.0 | FA2310E | FA2310U | FA4310E | FA4310U | FA3310 |
| 2 | 1N3070 | 0.01-1.0 | 3.0 | FA2320E | FA2320U | FA4320E | FA4320U | FA3320 |
| 3 | 1N3595 | 0.01-1.0 | 10 | FA2330E | FA2330U | FA4330E | FA4330U | FA3330 |
| 4 | | 0.1-10 | 10 | 1N4306 | - | - | | - |
| 5 | | 0.1-10 | 10 | - | _ | 1N4307 | - | |

MILITARY QUALIFIED DIODE ASSEMBLIES

PLASTIC AND GLASS PACKAGES

| Item | DEVICE NO. | BV V Min | IR nA @ Max | V _R V | V _F V Max | @ | IF mA | C pF Max | t _{rr} ns Max | Package No. |
|------|---------------|----------------|-------------------|------------------|----------------------------|-----|----------|----------------|------------------------------|----------------|
| 6 | 1N4306JAN | 75 | 50 | 50 | 1.0 | | 50 | 2.0 | 4.0 | 308 |
| 7 | 1N4306JANTX | 75 | 50 | 50 | 1.0 | i e | 50 | 2.0 | 4.0 | 308 |
| 8 | 1N4306JANTXV | 75 | 50 | 50 | 1.0 | | 50 | 2.0 | 4.0 | 308 |
| 9 | 1N4307JAN | 75 | 50 | 50 | 1.0 | | 50 | 2.0 | 4.0 | 310 |
| 10 | 1N4307JANTX | 75 | 50 | 50 | 1.0 | | 50 | 2.0 | 4.0 | 310 |
| 11 | 1N4307JANTXV | 75 | 50 | 50 | 1.0 | | 50 | 2.0 | 4.0 | 310 |

MONOLITHIC DIODE ARRAYS (NUMERIC LISTING)

PLASTIC - CERAMIC - METAL PACKAGES

| Item | DEVICE NO. | BV V Min | V _F V Max | @ | IF mA | ΔVF mV Max | t _{rr} ns Min | Configuration | Package No. |
|------|---------------|----------------|----------------------------|-----|----------|------------------|------------------------------|---------------|----------------|
| 12 | FSA1410M | 60 | 1.0 | 0.5 | 100 | 15 | 10 | CA8 | TO-18 |
| 13 | FSA1411M | 60 | 1.0 | 0.1 | 100 | 15 | 10 | CC8 | TO-18 |
| 14 | FSA2002M | 60 | 1.0 | | 100 | 15 | 10 | CC8 | TO-91 |
| 15 | FSA2003M | 60 | 1.0 | | 100 | 15 | 10 | CA8 | TO-91 |
| 16 | FSA2500M | 60 | 1.0 | | 100 | 15 | 10 | M16 | TO-91 |
| 17 | FSA2501M | 60 | 1.0 | | 100 | 15 | 10 | M16 | TO-116 |
| 18 | FSA2501P | 60 | 1.0 | | 100 | 15 | 10 | M16 | TO-116 |
| 19 | FSA2502M | 60 | 1.0 | | 100 | 15 | 10 | M16 | TO-96 |

DIODES

MONOLITHIC DIODE ARRAYS (NUMERIC LISTING) (Cont'd)

PLASTIC - CERAMIC - METAL PACKAGES

| Item | DEVICE NO. | BV V Min | V _F V Max | @ | I _F mA | ΔVF mV Max | t _{rr} ns Min | Configuration | Package No. |
|------|---------------|----------------|----------------------------|-------------|-------------------|------------------|------------------------------|---------------|----------------|
| 1 | FSA2503M | 60 | 1.0 | | 100 | 15 | 10 | 2M8 | TO-116 |
| 2 | FSA2503P | 60 | 1.0 | | 100 | 15 | 10 | 2M8 | TO-116 |
| 3 | FSA2504M | 60 | 1.0 | DAT | 100 | 15 | 10 | 2M8 | TO-86 |
| 4 | FSA2508M | 60 | 1.3 | GAL | 500 | 15 | 10 | 4M4 | 6B |
| 5 | FSA2508P | 60 | 1.3 | | 500 | 15 | 10 | 4M4 | 9B |
| 6 | FSA2509M | 60 | 1.3 | Gi- | 500 | 15 | 10 | 2M8 | TO-116 |
| 7 | FSA2509P | 60 | 1.3 |] 0. | 500 | 15 | 10 | 2M8 | TO-116 |
| 8 | FSA2510M | 60 | 1.3 | 08 | 500 | 15 | 10 | M16 | TO-116 |
| 9 | FSA2510P | 60 | 1.3 | 0.0 | 500 | 15 | 10 | M16 | TO-116 |
| 10 | FSA2563M | 60 | 1.3 | 100 | 500 | 15 | 10 | CC8 | TO-116 |
| 11 | FSA2563P | 60 | 1.3 | | 500 | 15 | 10 | CC8 | TO-116 |
| 12 | FSA2564M | 60 | 1.3 | 0.0 | 500 | 15 | 10 | CA8 | TO-116 |
| 13 | FSA2564P | 60 | 1.3 | l tar | 500 | 15 | 10 | CA8 | TO-116 |
| 14 | FSA2565M | 60 | 1.3 | | 500 | 15 | 10 | CC13 | TO-116 |
| 15 | FSA2565P | 60 | 1.3 | la la | 500 | 15 | 10 | CC13 | TO-116 |
| 16 | FSA2566M | 60 | 1.3 | | 500 | 15 | 10 | CA13 | TO-116 |
| 17 | FSA2566P | 60 | 1.3 | | 500 | 15 | 10 | CA13 | TO-116 |
| 18 | FSA2619M | 100 | 1.0 | | 10 | 15 | 5 | S8 | 6B |
| 19 | FSA2619P | 100 | 1.0 | | 10 | 15 | 5 | S8 | 9B |
| 20 | FSA2620M | 100 | 1.0 | | 10 | 15 | 5 | S7 | TO-116 |
| 21 | FSA2620P | 100 | 1.0 | | 10 | 15 | 5 | S7 | TO-116 |
| 22 | FSA2621M | 100 | 1.0 | | 10 | 15 | 5 | S7 | TO-86 |
| 23 | FSA2702M | 60 | 1.0 | | 200 | 3 | 6 | R4 | TO-33 |
| 24 | FSA2703M | 60 | 1.0 | | 200 | 3 | 6 | R4 | TO-72 |
| 25 | FSA2704M | 60 | 1.0 | | 200 | _ | 6 | R4 | TO-33 |
| 26 | FSA2705M | 60 | 1.0 | | 200 | _ | 6 | R4 | TO-72 |
| 27 | FSA2719M | 75 | 1.0 | | 10 | 15 | 6 | S8 | 6B |
| 28 | FSA2719P | 75 | 1.0 | La contract | 10 | 15 | 6 | S8 | 9B |
| 29 | FSA2720M | 75 | 1.0 | * * | 10 | 15 | 6 | S7 | TO-116 |
| 30 | FSA2720P | 75 | 1.0 | 14 | 10 | 15 | 6 | S7 | TO-116 |
| 31 | FSA2721 | 75 | 1.0 | * * | 10 | 15 | 6 | S7 | TO-86 |

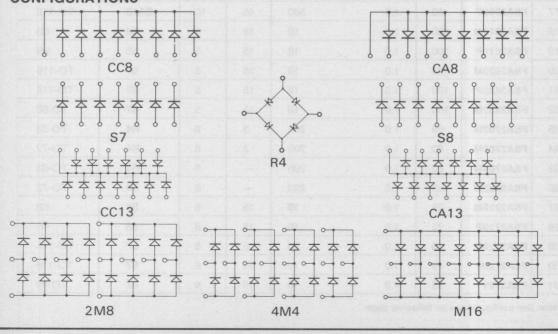
Note: See configurations on following page.

DIODES

MILITARY QUALIFIED DIODE ARRAYS (NUMERIC LISTING) CERAMIC PACKAGES

| Item | DEVICE NO. | BV V Min | V _F V Max | @ | IF mA | t _{fr} ns Max | t _{rr} ns Max | Configuration | Package No. |
|------|---------------|----------------|----------------------------|------|----------|------------------------------|------------------------------|---------------|----------------|
| 1 | 1N5768JAN | 60 | 1.0 | 85 | 100 | 40 | 20 | · CC8 | TO-91 |
| 2 | 1N5768JANTX | 60 | 1.0 | 21 | 100 | 40 | 20 | CC8 | TO-91 |
| 3 | 1N5768JANTXV | 60 | 1.0 | | 100 | 40 | 20 | CC8 | TO-91 |
| 4 | 1N5770JAN | 60 | 1.0 | 1 | 100 | 40 | 20 | CA8 | TO-91 |
| 5 | 1N5770JANTX | 60 | 1.0 | 81 | 100 | 40 | 20 | CA8 | TO-91 |
| 6 | 1N5770JANTXV | 60 | 1.0 | 84 | 100 | 40 | 20 | CA8 | TO-91 |
| 7 | 1N5772JAN | 60 | 1.0 | , et | 100 | 40 | 20 | M16 | TO-91 |
| 8 | 1N5772JANTX | 60 | 1.0 | 15 | 100 | 40 | 20 | M16 | TO-91 |
| 9 | 1N5772JANTXV | 60 | 1.0 | 31 | 100 | 40 | 20 | M16 | TO-91 |
| 10 | 1N5774JAN | 60 | 1.0 | | 100 | 40 | 20 | 2M8 | TO-86 |
| 11 | 1N5774JANTX | 60 | 1.0 | 45 | 100 | 40 | 20 | 2M8 | TO-86 |
| 12 | 1N5774JANTXV | 60 | 1.0 | 181 | 100 | 40 | 20 | 2M8 | TO-86 |
| 13 | 1N6100JAN | 75 | 1.0 | | 100 | 15 | 5.0 | S7 | TO-86 |
| 14 | 1N6100JANTX | 75 | 1.0 | 31 | 100 | 15 | 5.0 | S7 | TO-86 |
| 15 | 1N6100JANTXV | 75 | 1.0 | | 100 | 15 | 5.0 | S7 | TO-86 |

CONFIGURATIONS



2 -

DIODES

DIODE DICE (BY DESCENDING BV)

| Item | DEVICE NO. | Basic Standard Device | | IR nA @ Max | V _R V | | @ mA | t _{rr} ns @ | If = Ir mA | C pF Max | Chip Size Mils | Basic Application |
|------|---------------|-----------------------------|-----|-------------------|------------------|-----|------|----------------------|---------------|----------------|----------------------|----------------------------|
| 1 | FDC3070 | 1N3070 | 200 | 100 | 175 | 1.0 | 100 | 50 | 10 | 2.5 | 15x15 | High Voltage Switching |
| 2 | FDC485B | 1N485B | 200 | 25 | 175 | 1.0 | 100 | 500 | 10 | 5.0 | 17.5x17.5 | High Voltage Low Leakage |
| 3 | FDC3600 | 1N3600 | 75 | 100 | 50 | 1.0 | 100 | 4.0 | 10 | 2.5 | 15x15 | General Purpose Switching |
| 4 | FDC4376 | 1N4376 | 20 | 100 | 10 | 1.1 | 50 | 0.8 | 10 | 1.2 | 17.5x17.5 | Ultra High Speed Switching |

RECTIFIERS

GENERAL PURPOSE RECTIFIERS

GLASS PACKAGE

| Item | DEVICE NO. | V _R V Min | (@ μ A | V _F V Max | @ A | V _{FM} V Max | @ / | O Package |
|------|---------------|----------------------------|---------------|----------------------------|-----|-----------------------------|-----|-----------|
| 5 | 1N4001 | 50 | 10 | 1.1 | 1.0 | 1.6 | 1 | .0 DO-41 |
| 6 | 1N4002 | 100 | 10 | 1.1 | 1.0 | 1.6 | 1 | .0 DO-41 |
| 7 | 1N4003 | 200 | 10 | 1.1 | 1.0 | 1.6 | 1. | .0 DO-41 |
| 8 | 1N4004 | 400 | 10 | 1.1 | 1.0 | 1.6 | 1. | .0 DO-41 |
| 9 | 1N4005 | 600 | 10 | 1.1 | 1.0 | 1.6 | 1. | 0 DO-41 |

FAST RECOVERY RECTIFIERS

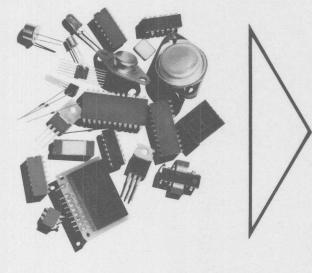
| Item | DEVICE NO. | V _R V Min | IR μΑ Max | V _F V Max | IF A | t _{rr} ns Max | Package No. |
|------|---------------|----------------------------|-----------------|----------------------------|---------|------------------------------|----------------|
| 10 | 1N4933 | 50 | 5.0 | 1.2 | 1.0 | 200 | DO-41 |
| 11 | 1N4934 | 100 | 5.0 | 1.2 | 1.0 | 200 | DO-41 |
| 12 | 1N4935 | 200 | 5.0 | 1.2 | 1.0 | 200 | DO-41 |
| 13 | 1N4936 | 400 | 5.0 | 1.2 | 1.0 | 200 | DO-41 |
| 14 | 1N4937 | 600 | 5.0 | 1.2 | 1.0 | 200 | DO-41 |

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RECTIFIERS

GENERAL PURPOSE RECTIFIERS

PAST RECOVERY RECTIFIERS GLASS PACHAGE



| PRODUCT INDEX | 1 |
|--|----|
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POWER

POWER TRANSISTORS (BY IC max, POLARITY AND ASCENDING V CEO)

| | DEVIC | | VCEO | hFE | @ lc | VCE(sat) | | fT | PD(Max) | Desta |
|------|-------------|-----------|----------|---------|------|---------------------|-------|-----------------|-----------------|----------------|
| Item | NPN | PNP | V Max | Min/Max | A | V Max | A | MHz Min(Typ) | T C= 25°C | Package No. |
| Ic= | 0.1 A Max C | ontinuous | | | | | | o lacki enc | ontined setting | A D.F. Figi |
| 1 | BF257 | | 160 | 25/- | 0.03 | 1.0 | 0.03 | 75 | 1.0 | TO-39 |
| 2 | BF336 | | 180 | 20/- | 0.03 | 08. <u>0</u> 00 | HOS_ | 50 | 1.0 | TO-39 |
| 3 | BF337 | | 200 | 20/- | 0.03 | 91.C 98 | | 50 | 1.0 | TO-39 |
| 4 | BF338 | | 225 | 20/- | 0.03 | -03 L 03 | | 50 | 1.0 | TO-39 |
| 5 | BF258 | | 250 | 25/- | 0.03 | 1.0 | 0.03 | 75 | 1.0 | TO-39 |
| 6 | D40N1F | | 250 | 30/90 | 0.02 | M T | ner_ | 40 | 10 | Dynawatt |
| 7 | D40N2F | TELE | 250 | 60/180 | 0.02 | 25.4 | #WE | 40 | 10 | Dynawatt |
| 8 | BF259 | | 300 | 25/- | 0.03 | 1.0 | 0.03 | 75 | 1.0 | TO-39 |
| 9 | D40N3F | | 300 | 30/90 | 0.02 | 00 L 00 | 1395_ | 40 | 10 | Dynawatt |
| 10 | D40N4F | | 300 | 60/180 | 0.02 | G3 1 6 | | 40 | 10 | Dynawatt |
| Ic= | 0.15 A Max | Continuou | s | 80 | 91 | Estate of | 3198 | 001 | 18111 214161 | 1445 |
| 11 | 2N5059 | | 250 | 30/150 | 0.03 | 1.0 | 0.03 | 30 | 1.0 | TO-39 |
| 12 | 2N5058 | | 300 | 35/150 | 0.03 | 1.0 | 0.03 | 30 | 1.0 | TO-39 |
| Ic= | 0.5 A Max C | ontinuous | | 800 | es | 1-31 D (S | 1.00 | 085 46 | 18074 | |
| 13 | TIP61 | TIP62 | 40 | 40/- | 0.05 | 0.07 | 0.50 | 3.0 | 15 | TO-220 |
| 14 | TIP61A | TIP62A | 60 | 40/- | 0.05 | 0.07 | 0.50 | 3.0 | 15 | TO-220 |
| 15 | TIP61B | TIP62B | 80 | 40/- | 0.05 | 0.07 | 0.50 | 3.0 | 15 | TO-220 |
| 16 | TIP61C | TIP62C | 100 | 40/- | 0.05 | 0.07 | 0.50 | 3.0 | 15 | TO-220 |
| 17 | SE7055 | | 220 | 40/- | 0.03 | 1.00 | 0.02 | 50 | 1.0 | TO-39 |
| 18 | SE7056 | | 300 | 40/- | 0.03 | 1.00 | 0.02 | 50 | 1.0 | TO-39 |
| 19 | MPS-U10F | | 300 | 40/- | 0.03 | 30 2 19 | nge_ | 40 | 10 | Dynawatt |
| IC= | 1.0 A Max C | ontinuous | | 86.0 | 8.0 | S0.0 M | 1108 | 088 | 88 | 698 TE |
| 20 | FT427 | | 30 | 20/- | 0.50 | 18 - 18 | 1:00- | 085-1 | 10 | Dynawatt |
| 21 | FT527 | | 30 | 20/- | 0.50 | 90 p. 08 | T101- | 350- | 10 | TO-220 |
| 22 | D40D1F | D41D1F | 30 | 50/150 | 0.10 | 0.5 | 0.5 | 100- | 10 | Dynawatt |
| 23 | TIP29 | TIP30 | 40 | 15/75 | 1.00 | 0.7 | 1.0 | 3.0 | 30 | TO-220 |
| 24 | hyd a | 2N4898 | 40 | 20/100 | 0.50 | 0.6 | 1.0 | 3.0 | 25 | TO-66 |
| 25 | 2N4910 | | 40 | 20/100 | 0.50 | 0.6 | 1.0 | 4.0 | 25 | TO-66 |
| 26 | D40D4F | D41D4F | 45 | 50/150 | 0.10 | 0.5 | 0.5 | at - as | 10 | Dynawatt |
| 27 | TIP29A | TIP30A | 60 | 15/75 | 1.00 | 0.7 | 1.0 | 3.0 | 30 | TO-220 |
| 28 | Kel 1 | 2N3740 | 60 | 30/100 | 0.25 | 0.6 | 1.0 | 4.0 | 25 | TO-66 |

POWER

POWER TRANSISTORS (BY ICMax, POLARITY AND ASCENDING VCEO) (Cont'd)

| Item | | CE NO. larity PNP | VCEO V Max | h _{FE} | @ IC | VCE(sat) V Max | @ IC | f _T MHz Min(Typ) | PD(Max) W TC=25°C | Package No. |
|------|--------------------|-------------------------|------------------|-----------------|-------|----------------------|-------|-----------------------------------|-------------------------|----------------|
| | | Continuous | | | All I | | | (-)// | Albert Vinte | 6 ft ar 45 l |
| 1 | 2N4911 | Continuous | 60 | 20/100 | 0.50 | 0.5 | 1.0 | 4.0 | 25 | TO-66 |
| 2 | 214-311 | 2N4899 | 60 | 20/100 | 0.50 | 0.6 | 1.0 | 3.0 | 25 | TO-66 |
| 3 | D40D7F | D41D7F | 60 | 50/150 | 0.10 | 0.5 | 0.5 | | 10 | Dynawatt |
| 4 | D40D10F | D41D10F | 75 | 50/150 | 0.10 | 0.5 | 0.5 | 200 | 10 | Dynawatt |
| 5 | D40D13F | D41D13F | 75 | 50/150 | 0.10 | 0.5 | 0.5 | 933 L | 10 | Dynawatt |
| 6 | TIP29B | TIP30B | 80 | 15/75 | 1.00 | 0.7 | 1.0 | 3.0 | 30 | TO-220 |
| 7 | 111 230 | 2N3741 | 80 | 30/100 | 0.25 | 0.6 | 1.0 | 4.0 | 25 | TO-66 |
| 8 | THE REAL PROPERTY. | 2N4900 | 80 | 20/100 | 0.50 | 0.6 | 1.0 | 3.0 | 25 | TO-66 |
| 9 | 2N4912 | 2144300 | 80 | 20/100 | 0.50 | 0.6 | 1.0 | 4.0 | 25 | TO-66 |
| 10 | TIP29C | TIP30C | 100 | 15/75 | 1.00 | 0.7 | 1.0 | 3.0 | 30 | TO-220 |
| 11 | 2N5681 | 2N5679 | 100 | 40/150 | 0.25 | 1.0 | 0.5 | 30 | 10 | TO-39 |
| 12 | 2N5682 | 2N5680 | 120 | 40/150 | 0.25 | 1.0 | 0.5 | 30 | 10 | TO-39 |
| 13 | 2143002 | 2N5415 | 200 | 30/150 | 0.05 | 2.5 | 0.5 | 15 | 10 | TO-39 |
| 14 | | FTD5415 | 200 | 30/150 | 0.05 | 2.5 | 0.05 | 15 | 10 | Dynawati |
| 15 | FTD3440 | 1100410 | 250 | 40/160 | 0.02 | 0.5 | 0.05 | 15 | 10 | Dynawati |
| 16 | 2N3440 | | 250 | 40/160 | 0.02 | 0.5 | 0.05 | 15 | 10 | TO-39 |
| 17 | FT47 | | 250 | 30/150 | 0.30 | 1.0 | 1.0 | 10 | 40 | TO-220 |
| 18 | SE9331 | | 300 | 30/250 | 0.10 | 2.5 | 0.10 | 10 | 20 | TO-66 |
| 19 | FT48 | | 300 | 30/150 | 0.30 | 1.0 | 1.00 | 10 | 40 | TO-220 |
| 20 | | 2N5416 | 300 | 30/120 | 0.05 | 2.0 | 0.05 | 15 | 10 | TO-39 |
| 21 | | FTD5416 | 300 | 30/120 | 0.05 | 2.0 | 0.05 | 15 | 10 | Dynawatt |
| 22 | 2N3439 | | 350 | 40/160 | 0.02 | 0.5 | 0.05 | 15 | 10 | TO-39 |
| 23 | FT49 | | 350 | 30/150 | 0.30 | 1.0 | 1.00 | 10 | 40 | TO-220 |
| 24 | FTD3439 | | 350 | 40/160 | 0.02 | 0.5 | 0.05 | 15 | 10 | Dynawatt |
| 25 | FT50 | | 400 | 30/150 | 0.30 | 1.0 | 1.00 | 10 | 40 | TO-220 |
| Ic= | 2.0 A Max | Continuous | 0.0 | 9.1 | 1.6 | 8011 3 | | or L o | BSUZ | RALT D |
| 26 | FT428 | | 25 | 20/- | 0.5 | one is | DU- | DA - 568 | 10 | Dynawati |
| 27 | FT528 | | 25 | 20/- | 0.5 | 0012-0 | 35.05 | DN | 10 | TO-220 |
| 28 | FTD5321 | FTD5323 | 50 | 40/250 | 0.5 | 0.8 | 0.5 | 40 | 10 | Dynawat |
| 29 | 2N5321 | 2N5323 | 50 | 40/250 | 0.5 | 0.8 | 0.5 | 50 | 10 | TO-39 |
| 30 | MPS-U05F | MPS-U55F | 60 | 50/- | 0.25 | 0.5 | 0.25 | 40 | 10 | Dynawati |

POWER

POWER TRANSISTORS (BY ICMax, POLARITY AND ASCENDING VCEO) (Cont'd)

| Item | DEVIC Pola NPN | | V _{CEO} V Max | h _{FE} | @ IC | VCE(sat) V Max | @ Ic | f _T MHz Min(Typ) | PD(Max) W TC=25°C | Package No. |
|------|----------------------|--------------|------------------------------|-----------------|------|----------------------|------|-----------------------------------|-------------------------|----------------|
| Ic= | 2.0 A Max C | ontinuous (C | Cont'd) | | | | (b) | NSO) Maur | Mex Conti | ADATES |
| 1 | TIP110* | TIP115* | 60 | 1000/- | 1.0 | 2.5 | 2.0 | | 50 | TO-220 |
| 2 | 2N5320 | 2N5322 | 75 | 30/130 | 0.5 | 0.5 | 0.5 | 50 | 10 | TO-39 |
| 3 | FTD5320 | FTD5322 | 75 | 30/130 | 0.5 | 0.5 | 0.5 | 40 | 10 | Dynawatt |
| 4 | MPS-U06F | MPS-U56F | 80 | 50/- | 0.25 | 0.5 | 0.25 | 40 | 10 | Dynawatt |
| 5 | TIP111* | TIP116* | 80 | 1000/- | 1.0 | 2.5 | 2.0 | 138 | 50 | TO-220 |
| 6 | TIP112* | TIP117* | 100 | 1000/- | 1.0 | 2.5 | 2.0 | 38 L | 50 | TO-220 |
| 7 | MPS-U07F | MPS-U57F | 100 | 30/- | 0.25 | 0.05 | 0.25 | 40 | 10 | Dynawatt |
| 8 | FT401 | The same | 300 | 20/100 | 0.5 | 0.8 | 0.5 | 2.0 | 100 | TO-3 |
| Ic= | 3.0 A Max C | ontinuous | | 2.1 3 | 0 1 | 81 06 | 200 | 08 813 | 123 2846 | and le |
| 9 | TIP31 | TIP32 | 40 | 10/50 | 3.0 | 1.2 | 3.0 | 3.0 | 40 | TO-220 |
| 10 | | 2N4234 | 40 | 30/150 | 0.25 | 0.6 | 1.0 | 3.0 | 6.0 | TO-39 |
| 11 | 21 Ba | 2N4235 | 60 | 30/150 | 0.25 | 0.6 | 1.0 | 3.0 | 6.0 | TO-39 |
| 12 | 2N3766 | in all ai | 60 | 40/160 | 0.5 | 1.0 | 0.5 | 10 | 20 | TO-66 |
| 13 | 2N5334 | | 60 | 30/150 | 1.0 | 0.7 | 2.0 | 40 | 6.0 | TO-39 |
| 14 | TIP31A | TIP32A | 60 | 10/50 | 3.0 | 1.2 | 3.0 | 3.0 | 40 | TO-220 |
| 15 | TIP31B | TIP32B | 80 | 10/50 | 3.0 | 1.2 | 3.0 | 3.0 | 40 | TO-220 |
| 16 | | 2N4236 | 80 | 30/150 | 0.25 | 0.6 | 1.0 | 3.0 | 6.0 | TO-39 |
| 17 | 2N3767 | | 80 | 40/160 | 0.5 | 1.0 | 0.5 | 10 | 20 | TO-66 |
| 18 | 2N5335 | 0 | 80 | 30/150 | 1.0 | 0.7 | 2.0 | 40 | 6.0 | TO-39 |
| 19 | TIP31C | TIP32C | 100 | 10/50 | 3.0 | 1.2 | 3.0 | 3.0 | 40 | TO-220 |
| 20 | 2N5838 | | 250 | 8/40 | 3.0 | 1.0 | 3.0 | 5.0 | 100 | TO-3 |
| 21 | 2N5839 | 8 | 275 | 10/50 | 2.0 | 1.5 | 2.0 | 5.0 | 100 | TO-3 |
| 22 | FT402 | | 325 | 20/100 | 0.5 | 2.0 | 3.0 | 2.0 | 100 | TO-3 |
| 23 | 2N5840 | | 350 | 10/50 | 2.0 | 1.5 | 2.0 | 5.0 | 100 | TO-3 |
| IC= | 4.0 A Max C | ontinuous | | 9.7 | 6 | E.F. 0 | | 100 | AHS BA | e sec 1 a |
| 24 | 2N5296 | 0. | 40 | 30/120 | 1.0 | 1.0 | 1.0 | 0.8 | 36 | TO-226 |
| 25 | BD221 | BD224 | 40 | 30/120 | 1.0 | 1.0 | 1.0 | 0.8 | 36 | TO-220 |
| 26 | 2N4231 | | 40 | 25/100 | 1.5 | 0.7 | 1.5 | 4.0 | 35 | TO-66 |
| 27 | 2N4237 | | 40 | 30/150 | 0.25 | 0.6 | 1.0 | 1.0 | 6.0 | TO-39 |
| 28 | 2N6121 | 2N6124 | 45 | 25/100 | 1.5 | 0.6 | 1.5 | 2.5 | 40 | TO-220 |

Darlington

POWER

| POWER TRANSISTORS (BY ICH | ax, POLARITY AND ASCENDING VCEO) (Cont'd) |
|---------------------------|---|
| I OWE I INAMOIO ON OF ICH | da, I of All I All D Add Little I CEU/ (colled) |

| en sk | Po | CE NO. | VCEO V | | @ IC | V | @ IC | f _T MHz | PD(Max) W | Package |
|------------------|-----------|------------|-----------|---------|------|----------|----------|-----------------------|----------------------|----------|
| Item | NPN | PNP | Max | Min/Max | 580 | Max | ARREAT ! | Min(Typ) | T _C =25°C | No. |
| Ic= | 4.0 A Max | Continuous | (Cont'd |) | | | | htod) sucu | general asiM | A 0.5 mg |
| 1 | 2N3054 | | 55 | 25/150 | 0.5 | 1.0 | 0.5 | · _ 188 | 25 | TO-66 |
| 2 | 2N5298 | at e | 60 | 20/80 | 1.5 | 1.0 | 1.5 | 0.8 | 36 | TO-220 |
| 3 | BD222 | BD225 | 60 | 20/80 | 1.5 | 1.0 | 1.5 | 0.8 | 36 | TO-220 |
| 4 | 2N6122 | 2N6125 | 60 | 25/100 | 1.5 | 0.6 | 1.5 | 2.5 | 40 | TO-220 |
| 5 | 2N4232 | | 60 | 25/100 | 1.5 | 0.7 | 1.5 | 4.0 | 35 | TO-66 |
| 6 | 2N4238 | pe - | 60 | 30/150 | 0.25 | 0.6 | 1.0 | 1.0 | 6.0 | TO-39 |
| 7 | 2N5294 | 01 0 | 70 | 30/120 | 0.5 | 1.0 | 0.5 | 0.8 | 36 | TO-220 |
| 8 | BD220 | BD223 | 70 | 30/120 | 0.5 | 1.0 | 0.5 | 0.8 | 36 | TO-220 |
| 9 | 2N6123 | 2N6126 | 80 | 20/80 | 1.5 | 0.6 | 1.5 | 2.5 | 40 | TO-220 |
| 10 | 2N4233 | D 6. | 80 | 25/100 | 1.5 | 0.7 | 1.5 | 4.0 | 35 | TO-66 |
| 11 | 2N4239 | 2.0 | 80 | 30/150 | 0.25 | 0.6 | 1.0 | 1.0 | 6.0 | TO-39 |
| 12 | FT317 | FT417 | 100 | 35/- | 1.0 | 0.5 | 1.0 | 20 | 40 | TO-220 |
| 13 | 2N6473 | 2N6475 | 100 | 15/150 | 1.5 | 1.2 | 1.5 | 10 | 40 | TO-220 |
| 14 | FT317A | FT417A | 120 | 35/- | 1.0 | 0.5 | 1.0 | 20 | 40 | TO-220 |
| 15 | 2N6474 | 2N6476 | 120 | 15/150 | 1.5 | 1.2 | 1.5 | 10 | 40 | TO-220 |
| 16 | FT317B | FT417B | 140 | 35/- | 1.0 | 0.5 | 1.0 | 20 | 40 | TO-220 |
| I _C = | 5.0 A Max | Continuous | | 0.1 8 | | as o est | 100 | 0.6 | 142 | |
| 17 | 2N5067 | 2N4901 | 40 | 20/80 | 1.0 | 0.4 | 1.0 | 4.0 | 87.5 | TO-3 |
| 18 | 2N4913 | 2N4904 | 40 | 25/100 | 2.5 | 1.5 | 5.0 | 4.0 | 87.5 | TO-3 |
| 19 | 2N5490 | (A | 40 | 20/100 | 2.0 | 1.0 | 2.0 | 0.8 | 50 | TO-220 |
| 20 | 2N5494 | 997 1 | 40 | 20/100 | 3.0 | 1.0 | 3.0 | 0.8 | 50 | TO-220 |
| 21 | 2N5492 | | 55 | 20/100 | 2.5 | 1.0 | 2.5 | 0.8 | 50 | TO-220 |
| 22 | TIP120* | TIP125* | 60 | 1000/- | 0.5 | 2.0 | 3.0 | 1884 | 65 | TO-220 |
| 23 | BC323 | oor j | 60 | 50/250 | 0.5 | 0.15 | 0.5 | 988 - | 7.0 | TO-39 |
| 24 | 2N5068 | 2N4902 | 60 | 20/80 | 1.0 | 0.4 | 1.0 | 4.0 | 87.5 | TO-3 |
| 25 | 2N4895 | 8 36 | 60 | 40/120 | 2.0 | 1.0 | 5.0 | 50 | 7.0 | TO-39 |
| 26 | BFX34 | 8 - 3 | 60 | 40/150 | 2.0 | 1.0 | 0.5 | 70 | 5.0 | TO-39 |
| 27 | 2N4896 | 0.5 | 60 | 100/300 | 2.0 | 1.0 | 5.0 | 80 | 7.0 | TO-39 |
| 28 | 2N4914 | 2N4905 | 60 | 25/100 | 2.5 | 1.5 | 5.0 | 4.0 | 87.5 | TO-3 |
| 29 | 2N5496 | | 70 | 20/100 | 3.5 | 1.0 | 3.5 | 0.8 | 50 | TO-220 |

POWER

POWER TRANSISTORS (BY ICMax, POLARITY AND ASCENDING VCEO) (Cont'd)

| Item | DEVIC Pola NPN | | VCEO V Max | h _{FE} | @ IC | VCE(sat) V Max | @ IC | f _T MHz Min(Typ) | PD(Max) W TC=25°C | Package No. |
|------|----------------------|-----------|------------------|-----------------|------|----------------------|--------|-----------------------------------|-------------------------|----------------|
| C = | 5.0 A Max C | ontinuous | (Cont'd |) | | | - 0 | Pinco) auni | estimad seki | A U.B = 53 |
| 1 | TIP121* | TIP126* | 80 | 1000/- | 0.5 | 2.0 | 3.0 | 08 1188 | 65 | TO-220 |
| 2 | 2N5069 | 2N4903 | 80 | 20/80 | 1.0 | 0.4 | 1.0 | 4.0 | 87.5 | TO-3 |
| 3 | 2N4897 | 0 | 80 | 40/120 | 2.0 | 1.0 | 5.0 | 50 | 7.0 | TO-39 |
| 4 | 2N5336 | 0 | 80 | 30/120 | 2.0 | 0.7 | 2.0 | 30 | 6.0 | TO-39 |
| 5 | 2N5337 | 9 0 | 80 | 60/240 | 2.0 | 0.7 | 2.0 | 30 | 6.0 | TO-39 |
| 6 | 2N4915 | 2N4906 | 80 | 25/100 | 2.5 | 1.5 | 5.0 | 4.0 | 87.5 | TO-3 |
| 7 | TIP122* | TIP127* | 100 | 1000/- | 0.5 | 2.0 | 3.0 | <u> 20</u> 10011 | 65 | TO-220 |
| 8 | 2N5338 | | 100 | 30/120 | 2.0 | 0.7 | 2.0 | 30 | 6.0 | TO-39 |
| 9 | 2N5339 | | 100 | 60/240 | 2.0 | 0.7 | 2.0 | 30 | 6.0 | TO-39 |
| IC = | 6.0 A Max C | ontinuous | | 0,6 | 85.0 | | 1505 | 98 79 | 3146 | |
| 10 | TIP41 | TIP42 | 40 | 30/- | 0.3 | 1.5 | 6.0 | 3.0 | 65 | TO-220 |
| 11 | TIP41A | TIP42A | 60 | 30/- | 0.3 | 1.5 | 6.0 | 3.0 | 65 | TO-220 |
| 12 | TIP41B | TIP42B | 80 | 30/- | 0.3 | 1.5 | 6.0 | 3.0 | 65 | TO-220 |
| 13 | TIP41C | TIP42C | 100 | 30/- | 0.3 | 1.5 | 6.0 | 3.0 | 65 | TO-220 |
| Ic= | 7.0 A Max C | ontinuous | | .08 | 8.0 | 0.1 - 48 | Nos j | 38 | at at | ae I i |
| 14 | 2N6111 | N I I | 30 | 30/150 | 3.0 | 1.0 | 3.0 | 10 | 40 | TO-220 |
| 15 | 2N6129 | 2N6132 | 40 | 20/100 | 2.5 | 1.4 | 7.0 | 2.5 | 50 | TO-220 |
| 16 | 2N6109 | | 50 | 30/150 | 2.5 | 1.0 | 2.5 | 10 | 40 | TO-220 |
| 17 | 2N5873 | 2N5871 | 60 | 20/100 | 2.5 | 1.0 | 4.0 | 4.0 | 115 | TO-3 |
| 18 | 2N6130 | 2N6133 | 60 | 20/100 | 2.5 | 1.4 | 7.0 | 2.5 | 50 | TO-220 |
| 19 | 2N6107 | | 70 | 30/150 | 2.0 | 1.0 | 2.0 | 10 | 40 | TO-220 |
| 20 | 2N5874 | 2N5872 | 80 | 20/100 | 2.5 | 1.0 | 4.0 | 4.0 | 115 | TO-3 |
| 21 | 2N6131 | 2N6134 | 80 | 20/100 | 2.5 | 2.8 | 7.0 | 2.5 | 50 | TO-220 |
| IC = | 7.5 A Max C | ontinuous | | G. | | 1.0,0 0 | eros - | DE . | re | 366 0 |
| 22 | FT410 | | 200 | 30/90 | 1.0 | 0.8 | 1.0 | (5.0) | 100 | TO-3 |
| 23 | FT411 | | 300 | 30/90 | 1.0 | 0.8 | 1.0 | (5.0) | 100 | TO-3 |
| 24 | FT413 | | 325 | 20/80 | 0.5 | 0.8 | 0.5 | (5.0) | 100 | TO-3 |
| 25 | FT423 | | 325 | 30/90 | 1.0 | 0.8 | 1.0 | (5.0) | 100 | TO-3 |
| Ic= | 8.0 A Max C | ontinuous | | 0.8 | 45 | los m | 1981 J | 06- | 1880 | 385 |
| 26 | 2N5877 | 2N5875 | 60 | 20/100 | 4.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |

POWER

POWER TRANSISTORS (BY ICMax, POLARITY AND ASCENDING VCEO) (Cont'd)

| Item | the second secon | E NO. arity | VCEO V Max | h _{FE} | @ IC | VCE(sat) V Max | @ IC | f _T MHz Min(Typ) | PD(Max) W TC=25°C | Package No. |
|------|--|----------------|------------------|-----------------|------|----------------------|----------|-----------------------------------|-------------------------|----------------|
| Ic= | 8.0 A Max C | ontinuous | | | | | | Canada Langu | elleress was | ABBBA |
| 1 | 2N6055* | 2N6053* | 60 | 750/18K | 4.0 | 2.0 | 4.0 | 4.0 | 100 | TO-3 |
| 2 | 2N5878 | 2N5876 | 80 | 20/100 | 4.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |
| 3 | 2N6056* | 2N6054* | 80 | 750/18K | 4.0 | 2.0 | 4.0 | 4.0 | 100 | TO-3 |
| 4 | 2N6306 | | 250 | 15/75 | 3.0 | 0.8 | 3.0 | 5.0 | 125 | TO-3 |
| 5 | 2N6307M | | 300 | 15/75 | 3.0 | 1.0 | 3.0 | 5.0 | 125 | TO-3 |
| 6 | 2N6308M | | 350 | 12/60 | 3.0 | 1.5 | 3.0 | 5.0 | 125 | TO-3 |
| Ic= | 10.0 A Max | Continuous | S | 0.0 | 15 | 1.89 | - LOGION | 001 -78 | air i resi | qıy I t |
| 7 | 2N6103 | | 40 | 15/60 | 8.0 | 2.5 | 16 | our + | 75 | TO-220 |
| 8 | 2N6386* | | 40 | 1K/20K | 3.0 | 2.0 | 3.0 | 20 | 40 | TO-220 |
| 9 | | 2N4907 | 40 | 20/80 | 4.0 | 0.75 | 4.0 | 4.0 | 150 | TO-3 |
| 10 | 2N6383* | | 40 | 1K/20K | 5.0 | 2.0 | 5.0 | 20 | 100 | TO-3 |
| 11 | 2N3713 | | 60 | 25/75 | 1.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |
| 12 | | 2N3789 | 60 | 25/90 | 1.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |
| 13 | 2N6099 | | 60 | 20/80 | 4.0 | 2.5 | 10 | ear + or | 75 | TO-220 |
| 14 | 2N3715 | | 60 | 50/150 | 1.0 | 0.8 | 5.0 | 4.0 | 150 | ТО-3 |
| 15 | or low | 2N3791 | 60 | 50/180 | 1.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |
| 16 | 2N6387* | | 60 | 1K/20K | 3.0 | 2.0 | 3.0 | 20 | 40 | TO-220 |
| 17 | MJE3055F | | 60 | 20/70 | 4.0 | 1.1 | 4.0 | 2.0 | 70 | TO-220 |
| 18 | | 2N4908 | 60 | 20/80 | 4.0 | 0.75 | 4.0 | 4.0 | 150 | TO-3 |
| 19 | SE9300* | SE9400* | 60 | 1000/- | 4.0 | 2.0 | 4.0 | 1.0 | 70 | TO-220 |
| 20 | SE9303* | SE9403* | 60 | 1000/- | 4.0 | 2.0 | 4.0 | 1.0 | 100 | ТО-3 |
| 21 | 2N6384* | | 60 | 1K/20K | 5.0 | 2.0 | 5.0 | 20 | 100 | TO-3 |
| 22 | MJ2500* | MJ3000* | 60 | 1000/- | 5.0 | 2.0 | 10 | 08 T AR | 150 | TO-3 |
| 23 | 2N6101 | | 70 | 20/80 | 5.0 | 2.5 | 10 | -,000 | 75 | TO-220 |
| 24 | 2N3714 | | 80 | 25/75 | 1.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |
| 25 | 00 | 2N3790 | 80 | 25/90 | 1.0 | 1.0 | 5.0 | 4.0 | 150 | TO-3 |
| 26 | 2N3716 | | 80 | 50/150 | 1.0 | 0.8 | 5.0 | 4.0 | 150 | TO-3 |
| 27 | Di. | 2N3792 | 80 | 50/180 | 1.0 | 1.0 | 5.0 | 4.0 | 150 | ТО-3 |
| 28 | 2N6388* | | 80 | 1K/20K | 3.0 | 2.0 | 3.0 | 20 | 40 | TO-220 |
| 29 | | 2N4909 | 80 | 20/80 | 4.0 | 0.75 | 4.0 | 4.0 | 150 | TO-3 |

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POWER

POWER TRANSISTORS (BY ICmax, POLARITY AND ASCENDING VCEO) (Cont'd)

| 195 | Po | CE NO. | VCEO V | | @ IC | VCE(sat) | @ IC | f _T MHz | PD(Max) W | Package |
|------|------------|-----------|-----------|---------|------|----------|-------|-----------------------|----------------------|---------|
| Item | NPN | PNP | Max | Min/Max | | Max | | Min(Typ) | T _C =25°C | No. |
| Ic= | 10.0 A Max | Continuou | s (Cont | 'd) | | 0.8 08 | 11:05 | -02 19 | SEVEL SON | 281 |
| 1 | SE9304* | SE9404* | 80 | 1K/- | 4.0 | 2.0 | 4.0 | 1.0 | 100 | TO-3 |
| 2 | SE9301* | SE9401* | 80 | 1K/- | 4.0 | 2.0 | 4.0 | 1.0 | 70 | TO-220 |
| 3 | 2N6385* | | 80 | 1K/20K | 5.0 | 2.0 | 5.0 | 20 | 100 | TO-3 |
| 4 | MJ2501 | MJ3001 | 80 | 1000/- | 5.0 | 2.0 | 10 | 094 109 | 150 | TO-3 |
| 5 | SE9302* | SE9402* | 100 | 1K/- | 4.0 | 2.0 | 1.0 | 021 | 70 | TO-220 |
| 6 | SE9305* | SE9405* | 100 | 1K/- | 4.0 | 2.0 | 40 | 1.0 | 100 | TO-3 |
| 7 | 2N6249 | | 200 | 10/50 | 10 | 1.5 | 10 | 2.5 | 100 | TO-3 |
| 8 | 2N6250 | | 275 | 8/50 | 10 | 1.5 | 10 | 2.5 | 100 | TO-3 |
| 9 | FT430 | | 300 | 15/45 | 2.5 | 0.9 | 2.5 | -61601 | 125 | TO-3 |
| 10 | FT160 | ar | 300 | 55/- | 4.0 | 1.9 | 5.0 | 08 - | 70 | TO-220 |
| 11 | FT431 | 02 | 325 | 15/35 | 2.5 | 0.7 | 2.5 | 08 - 0 | 125 | TO-3 |
| 12 | FT161 | 87 | 330 | 55/- | 4.0 | 1.9 | 5.0 | 00 - 198 | 70 | TO-220 |
| 13 | FT162 | | 350 | 55/- | 4,0 | 1.9 | 5.0 | RV - | 70 | TO-220 |
| 14 | FT359* | | 350 | 250/- | 3.0 | 2.8 | 7.0 | gs — 181 | 125 | TO-3 |
| 15 | 2N6251 | os. | 350 | 6/50 | 10 | 1.5 | 10 | 2.5 | 100 | TO-3 |
| Ic= | 12.0 A Max | Continuou | s | 68) | | | 19181 | 98 | 808 | are a |
| 16 | 2N6569 | | 40 | 15/200 | 0.2 | 1.5 | 4.0 | 1.5 | 100 | TO-3 |
| 17 | 2N6057* | 2N6050* | 60 | 750/18K | 6.0 | 2.0 | 6.0 | 4.0 | 150 | TO-3 |
| 18 | 2N5881 | 2N5879 | 60 | 20/100 | 6.0 | 1.0 | 7.0 | 4.0 | 160 | TO-3 |
| 19 | 2N5882 | 2N5880 | 80 | 20/100 | 6.0 | 1.0 | 7.0 | 4.0 | 160 | TO-3 |
| 20 | 2N6058* | 2N6051* | 80 | 750/18K | 6.0 | 2.0 | 6.0 | 4.0 | 150 | TO-3 |
| 21 | 2N6059* | 2N6052* | 100 | 750/18K | 6.0 | 2.0 | 6.0 | 4.0 | 150 | TO-3 |
| Ic= | 15.0 A Max | Continuou | s | an | 0.1 | dr (| 10/01 | D4 1 100 | Euro | |
| 22 | 2N6486 | 2N6489 | 40 | 20/150 | 5.0 | 1.3 | 5.0 | 5.0 | 75 | TO-220 |
| 23 | MJ2955 | | 60 | 20/70 | 4.0 | 1.1 | 4.0 | 4.0 | 150 | TO-3 |
| 24 | 2N6576* | | 60 | 2K/20K | 4.0 | 4.0 | 15 | 10 | 120 | TO-3 |
| 25 | 2N3055SD | 65 | 60 | 20/70 | 4.0 | 1.1 | 4.0 | 0.8 | 115 | TO-3 |
| 26 | FT3055 | FT2955 | 60 | 20/70 | 4.0 | 1.1 | 4.0 | 2.0 | 70 | TO-220 |
| 27 | 2N3055 | | 60 | 20/70 | 4.0 | 1.1 | 4.0 | - | 117 | TO-3 |
| 28 | 2N6487 | 2N6490 | 60 | 20/150 | 5.0 | 1.3 | 5.0 | 5.0 | 75 | TO-220 |

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POWER TRANSISTORS (BY ICmax, POLARITY AND ASCENDING VCEO) (Cont'd)

| Item | the last of the la | CE NO. arity PNP | VCEO V Max | h _{FE} | @ IC | VCE(sat) V | @ IC | f _T MHz Min(Typ) | PD(Max) W T _C =25°C | Package No. |
|------|--|------------------------|------------------|-----------------|------|---------------|----------|-----------------------------------|--------------------------------------|----------------|
| 9897 | | | | | | - max | osnelle. | (.,) | | |
| | 15.0 A Max | | | | | T | | | March - park | TO 000 |
| 1 | 2N6488 | 2N6491 | 80 | 20/150 | 5.0 | 1.3 | 5.0 | 5.0 | 75 | TO-220 |
| 2 | 2N6577* | 77 | 90 | 2K/20K | 4.0 | 4.0 | 15 | 10 | 120 | ТО-3 |
| IC = | 16.0 A Max | Continuou | S | 0.4 | 0.5 | 1.02 | - POPE - | 98 | BREAK F. THE | |
| 3 | 2N5629 | üt. | 100 | 25/100 | 8.0 | 1.0 | 10 | 0.5 | 200 | TO-3 |
| 4 | | 2N6029 | 100 | 25/100 | 8.0 | 2.0 | 16 | 1.0 | 200 | TO-3 |
| 5 | 2N5630 | | 120 | 20/80 | 8.0 | 1.0 | 10 | 0.5 | 200 | TO-3 |
| 6 | | 2N6030 | 120 | 20/80 | 8.0 | 2.0 | 16 | 1.0 | 200 | ТО-3 |
| 7 | 2N5631 | | 140 | 15/60 | 8.0 | 1.0 | 10 | 0.5 | 200 | TO-3 |
| 8 | | 2N6031 | 140 | 15/60 | 8.0 | 2.0 | 16 | 1.0 | 200 | TO-3 |
| IC= | 20.0 A Max | Continuou | IS | | | | i isida | | | Cattl. I |
| 9 | 2N3772 | | 60 | 15/60 | 10 | 1.4 | 10 | 0.2 | 150 | TO-3 |
| 10 | 2N5885 | 2N5883 | 60 | 20/100 | 10 | 1.0 | 15 | 4.0 | 200 | TO-3 |
| 11 | 2N6282* | 2N6285* | 60 | 750/18K | 10 | 2.0 | 10 | 4.0 | 160 | TO-3 |
| 12 | 2N5039 | | 75 | 20/100 | 10 | 1.0 | 10 | 60 | 140 | TO-3 |
| 13 | 2N6283* | 2N6286* | 80 | 750/18K | 10 | 2.0 | 10 | 4.0 | 160 | TO-3 |
| 14 | 2N5886 | 2N5884 | 80 | 20/100 | 10 | 1.0 | 15 | 4.0 | 200 | TO-3 |
| 15 | 2N5303 | | 80 | 15/60 | 10 | 2.0 | 20 | 2.0 | 200 | TO-3 |
| 16 | 2N5038 | or and | 90 | 20/100 | 12 | 1.0 | 12 | 60 | 140 | TO-3 |
| 17 | 2N6284* | 2N6287* | 100 | 750/18K | 10 | 2.0 | 10 | 4.0 | 160 | TO-3 |
| Ic= | 30.0 A Max | Continuou | IS | 0.1 | 0.1 | 1 0.0 0 | erves | 00 8 | Bang 18 | BEMO O |
| 18 | 2N3771 | 67 | 40 | 15/60 | 15 | 2.0 | 15 | 0.2 | 150 | TO-3 |
| 19 | | 2N4398 | 40 | 15/60 | 15 | 1.0 | 15 | 4.0 | 200 | TO-3 |
| 20 | 2N5301 | ar i | 40 | 15/60 | 15 | 2.0 | 20 | 2.0 | 200 | TO-3 |
| 21 | | 2N4399 | 60 | 15/60 | 15 | 1.0 | 15 | 4.0 | 200 | TO-3 |
| 22 | 2N5302 | V 5 - 1 1 1 | 60 | 15/60 | 15 | 2.0 | 20 | 2.0 | 200 | TO-3 |
| 23 | SE9306 | SE9406 | 60 | 1000/- | 10 | 2.0 | 10 | 4.0 | 160 | TO-3 |
| 24 | SE9307 | SE9407 | 80 | 1000/- | 10 | 2.0 | 10 | 4.0 | 160 | TO-3 |
| 25 | MJ802 | MJ4502 | 90 | 25/100 | 7.5 | 0.8 | 7.5 | 2.0 | 200 | TO-3 |
| 26 | SE9308 | SE9408 | 100 | 1000/- | 10 | 2.0 | 10 | 4.0 | 160 | TO-3 |

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POWER

POWER TRANSISTORS (BYICmax, POLARITY AND ASCENDING VCEO) (Cont'd)

| | | CE NO. | VCEO | hFE | @ IC | VCE(sat) | @ IC | f _T MHz | PD(Max) W | Package |
|------|------------|----------|------------|--------|------|----------|-------|-----------------------|--------------|-----------------|
| Item | NPN | PNP | Max | Min/Ma | X | Max | | Min(Typ) | TC=25°C | No. |
| IC= | 50.0 A Max | Continuo | us (Cont'd | 1) | | | MESSA | X6.b1 | | of the state of |
| 1 | 2N5685 | 2N5683 | 60 | 15/60 | 25 | 1.0 | 25 | 2.0 | 300 | TO-3 |
| 2 | 2N5686 | 2N5684 | 80 | 15/60 | 25 | 1.0 | 25 | 2.0 | 300 | TO-3 |

POWER SWITCHING TRANSISTORS (BY I Cmax, POLARITY)

| E40) | | | | | | Swit | ching T | imes (T | | | |
|-------|------------|-------------------------|------------------|-----------------|------|-----------|----------------------|----------------------|-----|---|----------------|
| Item | | CE NO. larity PNP | VCEO V Max | h FE Min/Max | @ IC | ton μs | t _s μs | t _f μs | @IC | P _D W T _C =25°C | Package No. |
| IC M | ax = 1.0 A | | | | | | | | | | |
| 3 | 2N3440 | | 250 | 40/160 | 0.2 | 0.07 | 2.2 | 0.35 | 0.1 | 10 | TO-39 |
| 4 | FT47 | The same | 250 | 30/150 | 0.3 | 0.08 | 1.8 | 0.4 | 1.0 | 40 | TO-220 |
| 5 | FT48 | I I Man | 300 | 30/150 | 0.3 | 0.08 | 1.8 | 0.4 | 1.0 | 40 | TO-220 |
| 6 | FT49 | A saut as | 350 | 30/150 | 0.3 | 0.08 | 1.8 | 0.4 | 1.0 | 40 | TO-220 |
| 7 | FT50 | | 400 | 30/150 | 0.3 | 0.08 | 1.8 | 0.4 | 1.0 | 40 | TO-220 |
| I C M | ax = 3.0 A | | | | | | | | | | |
| 8 | 2N5839 | | 275 | 10/50 | 2.0 | 0.45 | 3.0 | 0.3 | 2.0 | 100 | TO-3 |
| 9 | 2N5840 | | 350 | 10/50 | 2.0 | 0.45 | 3.0 | 0.3 | 2.0 | 100 | TO-3 |
| I C M | ax = 10 A | | | | | | | | | | |
| 10 | 2N3716 | | 80 | 50/150 | 1.0 | 0.4 | .8 | 0.4 | 5.0 | 150 | TO-3 |
| 11 | FT430 | | 300 | 115/45 | 2.5 | 0.5 | 2.6 | 0.3 | 2.5 | 125 | TO-3 |
| 12 | FT431 | | 325 | 15/35 | 2.5 | 0.5 | 2.6 | 0.3 | 2.5 | 125 | TO-3 |
| 13 | 2N6249 | | 200 | 10/50 | 10 | 0.5 | 1.0 | 0.4 | 10 | 175 | TO-3 |
| 14 | 2N6250 | | 275 | 8/50 | 10 | 0.5 | 1.0 | 0.4 | 10 | 175 | TO-3 |
| 15 | 2N6251 | | 350 | 6/50 | 10 | 0.5 | 1.0 | 0.4 | 10 | 175 | TO-3 |
| 16 | FT3055 | FT2955 | 60 | 20/70 | 4.0 | .65/.35 | .5/.25 | .4/.15 | 10 | 70 | TO-220 |
| 17 | 2N6386* | | 40 | 1K/20K | 3.0 | 0.8 | 4.0 | 5.0 | 3.0 | 40 | TO-220 |
| 18 | 2N6387* | | 60 | 1K/20K | 5.0 | 0.8 | 3.5 | 5.0 | 5.0 | 40 | TO-220 |
| 19 | 2N6388* | | 80 | 1K/20K | 5.0 | 0.8 | 3.5 | 5.0 | 5.0 | 40 | TO-220 |

^{*}Darlington

POWER

POWER SWITCHING TRANSISTORS (BY IC max, POLARITY) (Cont'd)

| | (KARI) | 0,4 | | 31 (3) (June) | 10× 10 | 9 | witching | Times | | | |
|------|-----------------------|-----------------------|--------|---------------|--------|--------|----------------------|-------|---------------------|----------------------|-------------|
| | | CE NO. arity | VCEO V | hFE | | | t _f μs | @IC | P _D W | Package | |
| Item | NPN | PNP | Max | Min/Max | | Тур | Тур | Тур | Тур | T _C =25°C | No. |
| IC M | ax = 20 A | e 1 o | 8 | es c | | 85 08 | 31 | 18 | ESBR | 0.000 | AS I |
| 1 | 2N5038 | | 90 | 20/100 | 10 | 0.30 | 0.75 | 0.15 | 10 | 140 | TO-3 |
| 2 | 2N6282 ⁽¹⁾ | 2N6285 ⁽¹⁾ | 60 | 750/18K | 10 | .8/.6 | 3.3/2.5 | 4/1.5 | 10 | 160 | TO-3 |
| 3 | 2N6283 ⁽¹⁾ | 2N6286 ⁽¹⁾ | 80 | 750/18K | 10 | .8/.6 | 3.3/2.5 | 4/1.5 | 10 | 160 | TO-3 |
| 4 | 2N6284 ⁽¹⁾ | 2N6287 ⁽¹⁾ | 100 | 750/18K | 10 | .8/.6 | 3.3/2.5 | 4/1.5 | 10 | 160 | TO-3 |
| IC M | lax = 30 A | | 612 | 41 21 | | VALUE | en l | all I | 014 | 149 149 | 4 1 1 1 1 1 |
| 5 | 2N5301 | 2N4398 | 40 | 15/60 | 15 | .35/.3 | 1.2/.7 | .5/.4 | 10 | 200 | TO-3 |

POWER GROOVE MOS TRANSISTORS

| DSS | OT J. JA | 0.4 1.9 | 8 | | ma . | 1 0.0 | | Swi | tching | Times | (2) | | 45.44 |
|------|--------------------|-------------|-----------------------------|-----------------------------|------------------|----------------------------|------------------|---------------------|-----------------------------|----------------------|-----------------------------|----------------------------|----------------|
| Item | DEVIC N-Channel | P-Channel | V _{DS} V Max | V _{DG} V Max | IGF mA Max | I _D A Max | 9fs mV Min | td(on) ns Max | t _r ns Max | td(off) ns Max | t _f ns Max | P _D W Max | Package No. |
| 6 | VN46AF | B.F P.B | 40 | 40 | 2.0 | 2.0 | 170 | 5.0 | 5.0 | 5.0 | 5.0 | 12.5 | Dynawatt |
| 7 | VN66AF | | 60 | 60 | 2.0 | 2.0 | 170 | 5.0 | 5.0 | 5.0 | 5.0 | 12.5 | Dynawatt |
| 8 | 2N6657 | 02 60 | 60 | 60 | 2.0 | 2.0 | 170 | 5.0 | 5.0 | 5.0 | 5.0 | 25 | TO-3 |
| 9 | FVN2 | 1 48 50 | 60 | 60 | 2.0 | 2.0 | 100 | 10 | 10 | 10 | 10 | 6.25 | TO-39 |
| 10 | | FVP1 | 60 | 60 | 2.0 | 2.0 | 150 | 10 | 10 | 10 | 10 | 25 | TO-3 |
| 11 | | FVP2 | 60 | 60 | 2.0 | 1.5 | 100 | 10 | 10 | 10 | 10 | 6.25 | TO-39 |
| 12 | VN88AF | [CS EE | 80 | 80 | 2.0 | 2.0 | 170 | 5.0 | 5.0 | 5.0 | 5.0 | 12.5 | Dynawatt |
| 13 | 2N6658 | 1 2 2 2 2 | 90 | 90 | 2.0 | 2.0 | 170 | 5.0 | 5.0 | 5.0 | 5.0 | 25 | TO-3 |
| 14 | 2N6661 | 1 0 1 1 1 1 | 90 | 90 | 2.0 | 2.0 | 170 | 5.0 | 5.0 | 5.0 | 5.0 | 6.25 | TO-39 |

^{1.} Darlington

^{2.} $I_D = 1A$, $R_L = 25\Omega$

SMALL SIGNAL

HIGH SPEED SWITCHING TRANSISTORS (BY ASCENDING VCEO)

(FOR MEDIUM SPEED—SEE GENERAL PURPOSE SECTION)

| Item | | CE NO. | VCEO (VCER) V Min | t _S (t _{off}) ns Max | @ IC | h _{FE} | @ IC | V _{CE} V Max | (sat) @ IC mA | f _T MHz Min | C _{ob} | T _A 25°C | T _C 25°C | Package No. |
|------|----------|---------|----------------------------|---|------|-----------------|------|-----------------------------|---------------------|------------------------|-----------------|---------------------|------------------------|----------------|
| 1 | | 2N5228 | 5.0 | (140) | 10 | 30/- | 10 | 0.40 | 10 | 300 | 5.0 | 625 | 1.0 | TO-92 |
| 2 | | 2N3639 | 6.0 | 30 | 10 | 30/120 | 10 | 0.16 | 10 | 500 | 3.5 | 200 | 0.5 | TO-106 |
| 3 | 2N5134 | | 10 | 18 | 10 | 20/150 | 10 | 0.25 | 10 | 250 | 4.0 | 200 | 0.5 | TO-106 |
| 4 | 2N4274 | | 12 | 13 | 10 | 35/120 | 10 | 0.20 | 10 | 400 | 4.0 | 280 | 0.83 | TO-106 |
| 5 | 2N5224 | | 12 | (60) | 10 | 40/400 | 10 | 0.35 | 10 | 250 | 4.0 | 625 | 1.0 | TO-92 |
| 6 | 1 2 7 10 | 2N4258A | 12 | 15 | 10 | 30/120 | 10 | 0.15 | 10 | 700 | 3.0 | 200 | 0.5 | TO-106 |
| 7 | 1000 | 2N4208 | 12 | 20 | 10 | 30/120 | 10 | 0.15 | 10 | 700 | 3.0 | 350 | 0.7 | TO-18 |
| 8 | 0.8700 | 2N4258 | 12 | 20 | 10 | 30/120 | 10 | 0.15 | 10 | 700 | 3.0 | 200 | 0.5 | TO-106 |
| 9 | | PN4258 | 12 | 20 | 10 | 30/120 | 10 | 0.15 | 10 | 700 | 3.0 | 625 | 1.0 | TO-92 |
| 10 | 0.2 00 | 2N4313 | 12 | 20 | 10 | 30/120 | 30 | 0.19 | 30 | 700 | 4.5 | 200 | 0.5 | TO-106 |
| 11 | | PN3640 | 12 | (35) | 50 | 30/120 | 10 | 0.20 | 10 | 500 | 3.5 | 625 | 1.0 | TO-92 |
| 12 | | 2N3640 | 12 | 50 | 10 | 30/120 | 10 | 0.20 | 10 | 500 | 3.5 | 200 | 0.5 | TO-106 |
| 13 | | 2N2894 | 12 | (90) | 30 | 30/150 | 30 | 0.20 | 30 | 400 | 6.0 | 360 | 1.2 | TO-18 |
| 14 | The Tar | BSX29 | 12 | (90) | 30 | 30/120 | 30 | 0.20 | 30 | 400 | 6.0 | 360 | 1.2 | TO-18 |
| 15 | | 2N4209 | 15 | 20 | 10 | 50/120 | 10 | 0.18 | 10 | 850 | 3.0 | 350 | 0.7 | TO-18 |
| 16 | | 2N5771 | 15 | 20 | 10 | 50/120 | 10 | 0.15 | 10 | 850 | 3.0 | 625 | 1.0 | TO-92 |
| 17 | 2N4275 | | 15 | 13 | 10 | 35/120 | 10 | 0.20 | 10 | 400 | 4.0 | 280 | 0.83 | TO-106 |
| 18 | 2N2369 | I the I | 15 | 13 | 10 | 40/120 | 10 | 0.25 | 10 | 500 | 4.0 | 360 | 1.2 | TO-18 |
| 19 | PN2369 | 3 | 15 | 13 | 10 | 40/120 | 10 | 0.25 | 10 | 500 | 4.0 | 625 | 1.0 | TO-92 |
| 20 | 2N2369A | m mane | 15 | 13 | 10 | 40/120 | 10 | 0.20 | 10 | 500 | 4.0 | 360 | 1.2 | TO-18 |
| 21 | 2N5769 | | 15 | 13 | 10 | 40/120 | 10 | 0.20 | 10 | 500 | 4.0 | 625 | 1.0 | TO-92 |
| 22 | BSX26 | | 15 | 13 | 10 | 40/120 | 10 | 0.25 | 10 | 500 | 4.0 | 360 | 1.2 | TO-18 |
| 23 | 2N3009 | E 605 | 15 | 18 | 10 | 30/120 | 30 | 0.18 | 30 | 350 | 5.0 | 360 | 1.2 | TO-52 |
| 24 | 2N3013 | | 15 | 18 | 10 | 30/120 | 30 | 0.18 | 30 | 350 | 5.0 | 360 | 1.2 | TO-52 |
| 25 | 2N3646 | E - 1 | 15 | 18 | 10 | 30/120 | 30 | 0.20 | 30 | 350 | 5.0 | 200 | 0.5 | TO-106 |
| 26 | MPS3646 | | 15 | 18 | 10 | 30/120 | 30 | 0.20 | 30 | 350 | 5.0 | 625 | 1.0 | TO-92 |
| 27 | 2N5772 | 8 - 1 | 15 | 18 | 10 | 30/120 | 30 | 0.20 | 30 | 350 | 5.0 | 625 | 1.0 | TO-92 |
| 28 | BSX20 | 9 - | 15 | 18 | 10 | 30/120 | 30 | 0.18 | 30 | 350 | 5.0 | 360 | 1.2 | TO-18 |
| 29 | 2N914 | 10 - 1 | 15 | 20 | 20 | 30/120 | 10 | 0.25 | 20 | 300 | 6.0 | 360 | 1.2 | TO-18 |
| 30 | 2N708 | | 15 | 25 | 10 | 30/120 | 10 | 0.40 | 10 | 300 | 6.0 | 360 | 1.2 | TO-18 |
| 31 | 2N3014 | 8 - 1 | 20 | 18 | 10 | 30/120 | 30 | 0.18 | 30 | 350 | 5.0 | 360 | 1.2 | TO-52 |
| 32 | BSX39 | | 20 | 18 | 10 | 40/120 | 30 | 0.18 | 30 | 350 | 6.0 | 360 | 1.2 | TO-18 |

SMALL SIGNAL

HIGH SPEED SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd) (FOR MEDIUM SPEED—SEE GENERAL PURPOSE SECTION)

| Item | | CE NO. clarity PNP | VCEO (VCER) V Min | | @ IC | hFE Min/Max | @ IC | | (sat) @ IC mA | f _T MHz Min | C _{ob} pF Max | T _A 25°C mW | T _C 25°C W | Package No. |
|------|--------|--------------------|----------------------------|------|------|----------------|------|------|---------------------|------------------------|------------------------------|------------------------------|-----------------------------|----------------|
| 1 | | 2N5910 | 20 | 20 | 10 | 30/120 | 10 | 0.15 | 10 | 700 | 3.0 | 200 | 0.5 | TO-106 |
| 2 | | 2N3209 | 20 | (90) | 30 | 30/120 | 30 | 0.20 | 30 | 400 | 5.0 | 360 | 1.2 | TO-18 |
| 3 | 1 80 | 2N5023 | 30 | (90) | 500 | 40/100 | 500 | 0.35 | 500 | 200 | 25 | 1000 | 4.0 | TO-39 |
| 4 | 2N3724 | 988 Q.A | 30 | (60) | 500 | 60/150 | 100 | 0.20 | 100 | 300 | 12 | 800 | 3.5 | TO-39 |
| 5 | 2N4013 | ASB II CA | 30 | (60) | 500 | 60/150 | 100 | 0.20 | 100 | 300 | 12 | 360 | 1.2 | TO-18 |
| 6 | BSX32 | h05 0.8 | 40 | (60) | 500 | 60/150 | 100 | 0.25 | 100 | 300 | 10 | 800 | 3.5 | TO-39 |
| 7 | 2N3253 | HES 5.2 | 40 | (70) | 500 | 25/- | 150 | 0.35 | 150 | 175 | 12 | 1000 | 5.0 | TO-39 |
| 8 | | 2N3467 | 40 | (90) | 500 | 40/120 | 500 | 0.50 | 500 | 175 | 25 | 1000 | 5.0 | TO-39 |
| 9 | | 2N5022 | 50 | (90) | 500 | 25/100 | 500 | 0.40 | 500 | 170 | 25 | 1000 | 4.0 | TO-39 |
| 10 | | 2N3468 | 50 | (90) | 500 | 25/75 | 500 | 0.60 | 500 | 150 | 25 | 1000 | 5.0 | TO-39 |
| 11 | 2N4047 | 100 F 2 F | 50 | (60) | 500 | 40/150 | 100 | 0.26 | 100 | 250 | 10 | 800 | 3.5 | TO-39 |
| 12 | 2N3725 | 198 11 3 8 | 50 | (60) | 500 | 60/150 | 100 | 0.26 | 100 | 300 | 10 | 800 | 3.5 | TO-39 |
| 13 | 2N4014 | | 50 | (60) | 500 | 60/150 | 100 | 0.26 | 100 | 300 | 10 | 360 | 1.2 | TO-18 |
| 14 | 2N3444 | 13E 0.8 | 50 | (70) | 500 | 20/60 | 500 | 0.60 | 500 | 150 | 12 | 1000 | 5.0 | TO-39 |

GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| Item | | | VCEO | hFE | @ lc | VCE | (sat) | Cob | C _{ob} f _T pF MHz Max Min | toff ns Max | PD | | 12 BUS |
|------|---------|-----------|------|----------------------------|------|----------|-------|-----|---|-------------------|-----|-------|----------------|
| | | Polarity | | (h _{fe}) Min/Max | mA | V Max | @ IC | pF | | | TC | TA | Package No. |
| 15 | 2N5128 | C3 C3 | 12 | 35/350 | 50 | 0.25 | 150 | 10 | 200 | _ | 300 | 0.70 | TO-105 |
| 16 | | PN5139 | 20 | -/30 | 10 | 0.20 | 10 | 5.0 | 300 | - | 625 | 1.0 | TO-92 |
| 17 | 1 3 1 | 2N5142 | 20 | -/30 | 50 | 0.50 | 50 | 30 | 100 | 200 | 300 | 0.70 | TO-105 |
| 18 | r s. i | MPS6563 | 20 | 50/200 | 350 | 0.50 | 350 | 30 | 60 | | 625 | 1.0 | TO-92 |
| 19 | 2N5223 | os Loa | 20 | 50/800 | 2.0 | 0.70 | 2.0 | 4.0 | 150 | _ | 625 | 0446) | TO-92 |
| 20 | 2N5136 | 13 0.8 | 20 | 20/400 | 150 | 0.25 | 150 | 35 | 40 | _ | 220 | 0.60 | TO-105 |
| 21 | BFY52 | 20 04 | 20 | 60/- | 150 | 0.35 | 150 | 12 | 200 | - | 800 | 2.86 | TO-39 |
| 22 | MPS6561 | 86 88 | 20 | 50/200 | 350 | 0.50 | 150 | 30 | 60 | _ | 625 | 1.0 | TO-92 |
| 23 | MPS6515 | ec oa | 25 | 250/500 | 2.0 | 0.50 | 2.0 | 3.5 | 10-1 | _ | 625 | 1.0 | TO-92 |
| 24 | MPS2925 | 88 88 | 25 | (235/470) | 2.0 | shi= | Dt | 12 | 1 -1 | _ | 625 | 1.0 | TO-92 |
| 25 | MPS3392 | 06 08 | 25 | 150/300 | 2.0 | 31115 | AL -1 | 3.5 | 6-1 | - | 625 | 1.0 | TO-92 |
| 26 | MPS6514 | es l'étri | 25 | 150/300 | 2.0 | 0.50 | 2.0 | 3.5 | 10-1 | _ | 625 | 1.0 | TO-92 |

SMALL SIGNAL

GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| Item | DEVICE NO. Polarity NPN PNP | | VCEO (VCER) V Min | (VCER) | (VCER) | (VCER) | (VCER) V | (VCER) V | (VCER) | hFE (hfe) Min/Max | @ IC | VCE V Max | (sat) @ IC mA | C _{ob} | f _T MHz Min | toff ns Max | T _A 25°C mW | TC | Package No. |
|------|-----------------------------|-----------|----------------------------|-----------|--------|--------|-----------------|-------------|--------|-------------------------|------|-----------------|---------------------|-----------------|------------------------|-------------------|------------------------|----|----------------|
| 1 | MPS2924 | se 11 | 25 | (150/300) | 2.0 | 08+ | 01.7-0 | 12 | 10 - | _ | 625 | 1.0 | TO-92 | | | | | | |
| 2 | 2N4124 | os derili | 25 | 120/360 | 2.0 | 0.30 | 2.0 | 4.0 | 300 | | 625 | 00.00 | TO-92 | | | | | | |
| 3 | MPS3393 | oc oarfu | 25 | 90/180 | 2.0 | a- | (1) | 3.5 | | | 625 | 1.0 | TO-92 | | | | | | |
| 4 | EN5172 | | 25 | 100/500 | 10 | 0.25 | 10 | 12 | - | 1= | 200 | 0.50 | TO-106 | | | | | | |
| 5 | MPS5172 | | 25 | 100/500 | 10 | 0.25 | 10 | 12 | | - | 625 | 1.0 | TO-92 | | | | | | |
| 6 | 2N5135 | | 25 | 50/600 | 10 | 1.00 | 100 | 25 | 40 | - | 300 | 0.80 | TO-105 | | | | | | |
| 7 | 2N5225 | 2N5226 | 25 | 30/600 | 50 | 0.80 | 50 | 20 | 50 | - | 625 | 0.7 | TO-92 | | | | | | |
| 8 | BC738 | BC728 | 25 | 40/250 | 100 | 0.5 | 1000 | 45 | 100 | 10-11 | 1120 | 3.4 | TO-92 | | | | | | |
| 9 | BC738-6 | BC728-6 | 25 | 40/100 | 100 | 0.5 | 1000 | 45 | 100 | - | 1120 | 3.4 | TO-92 | | | | | | |
| 10 | BC738-10 | BC728-10 | 25 | 63/163 | 100 | 0.5 | 1000 | 45 | 100 | 10- | 1120 | 3.4 | TO-92 | | | | | | |
| 11 | PE8050 | PE8550 | 25 | 65/200 | 100 | 0.5 | 1000 | 45 | 100 | - | 1120 | 3.4 | TO-92 | | | | | | |
| 12 | BC738-16 | BC728-16 | 25 | 100/250 | 100 | 0.5 | 1000 | 45 | 100 | 181 18 1 | 1120 | 3.4 | TO-92 | | | | | | |
| 13 | MPS6560 | nt l == 1 | 25 | 50/200 | 500 | 0.50 | 500 | 30 | 60 | 751 | 625 | 1.0 | TO-92 | | | | | | |
| 14 | 1000 | MPS6519 | 25 | 250/500 | 2.0 | 0.50 | 2.0 | 4.0 | - | 8-150 | 625 | 1.0 | TO-92 | | | | | | |
| 15 | | 2N4126 | 25 | 120/360 | 2.0 | 0.40 | 2.0 | 4.5 | 250 | 1-0 | 625 | _ | TO-92 | | | | | | |
| 16 | | PN6076 | 25 | 100/500 | 10 | 0.25 | 10 | 15 | - | - | 721 | 1.47 | TO-92 | | | | | | |
| 17 | 1112 0 | ВСҮ72 | 25 | -/50 | 10 | 0.25 | 10 | 6.0 | 200 | - | 360 | 1.2 | TO-18 | | | | | | |
| 18 | | 2N3638 | 25 | -/30 | 50 | 0.25 | 50 | 20 | 100 | 170 | 300 | 0.7 | TO-105 | | | | | | |
| 19 | T 03 9 | MPS3702 | 25 | 60/300 | 50 | 0.25 | 50 | 12 | 100 | 3.00 | 625 | 1.0 | TO-92 | | | | | | |
| 20 | 1000 | 2N3638A | 25 | -/100 | 50 | 0.25 | 50 | 10 | 150 | 170 | 300 | 0.7 | TO-105 | | | | | | |
| 21 | 1985-0 | MPS3638A | 25 | -/100 | 50 | 0.25 | 50 | 10 | 150 | 170 | 625 | 1.0 | TO-92 | | | | | | |
| 22 | | MPS6562 | 25 | 50/200 | 500 | 0.50 | 500 | 30 | 60 | - | 625 | 1.0 | TO-92 | | | | | | |
| 23 | 2N718 | | 28 | 40/120 | 150 | 1.50 | 150 | 35 | 50 | 911 | 400 | 1.5 | TO-18 | | | | | | |
| 24 | 2N4123 | en lassin | 30 | 50/150 | 2.0 | 0.30 | 2.0 | 4.0 | 250 | _ | 625 | 80- | TO-92 | | | | | | |
| 25 | 2N3566 | 10 PSU 1 | 30 | 50/160 | 10 | 1.00 | 100 | 25 | 40 | _ | 300 | 0.80 | TO-105 | | | | | | |
| 26 | MPS3704 | 10 0 0 NA | 30 | 100/300 | 50 | 0.60 | 50 | 12 | 100 | | 625 | 1.0 | TO-92 | | | | | | |
| 27 | BFY51 | | 30 | 40/- | 150 | 0.35 | 150 | 12 | 50 | - | 800 | 2.86 | TO-39 | | | | | | |
| 28 | BC119 | | 30 | 40/120 | 150 | 0.35 | 150 | 25 | 40 | _ | 800 | 5.0 | TO-39 | | | | | | |
| 29 | 2N2218 | | 30 | 40/120 | 150 | 0.40 | 150 | 8.0 | 250 | | 800 | 3.0 | TO-39 | | | | | | |
| 30 | 2N2221 | | 30 | 40/120 | 150 | 0.40 | 150 | 8.0 | 250 | - | 500 | 1.8 | TO-18 | | | | | | |

SMALL SIGNAL

GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| Item | | CE NO. arity | VCEO (VCER) V Min | h _{FE} (h _{fe}) | @ IC | V _{CE} V Max | (sat) @ IC mA | C _{ob} | f _T MHz Min | toff ns Max | TA | T _C 25°C W | Package No. |
|------|--------------|-----------------|----------------------------|------------------------------------|------|-----------------------------|---------------------|-----------------|------------------------------|-------------------|------|-----------------------------|----------------|
| 1 | 2N3641 | | 30 | 40/120 | 150 | 0.22 | 150 | 8.0 | 250 | | 350 | 0.70 | TO-105 |
| 2 | 2N3300 | | 30 | 100/300 | 150 | 0.22 | 150 | 8.0 | 250 | 150 | 800 | 3.0 | TO-39 |
| 3 | 2N3302 | e | 30 | 100/300 | 150 | 0.22 | 150 | 8.0 | 250 | 150 | 360 | 1.80 | TO-18 |
| 4 | 2N2219 | | 30 | 100/300 | 150 | 0.40 | 150 | 8.0 | 250 | _ | 800 | 3.0 | TO-39 |
| 5 | 2N2222 | 8 1 - 1 | 30 | 100/300 | 150 | 0.40 | 150 | 8.0 | 250 | | 500 | 1.8 | TO-18 |
| 6 | 2N3643 | | 30 | 100/300 | 150 | 0.22 | 150 | 8.0 | 250 | _ | 350 | 0.70 | TO-105 |
| 7 | PN3643 | 8 - 1 | 30 | 100/300 | 150 | 0.22 | 150 | 8.0 | 250 | 1000 | 625 | 1.0 | TO-92 |
| 8 | 7 (10 00 | 2N4125 | 30 | 50/150 | 2.0 | 0.40 | 2.0 | 4.5 | 200 | 257 | 625 | 820 | TO-92 |
| 9 | Clas N | 2N5227 | 30 | 50/700 | 2.0 | 0.40 | 2.0 | 5.0 | 100 | 0.00 | 625 | 8-19 <u>15</u> | TO-92 |
| 10 | P. 4 E G | PN4916 | 30 | 70/200 | 10 | 0.14 | 10 | 4.5 | 400 | 150 | 625 | 1.0 | TO-92 |
| 11 | 14.8 03 | PN4917 | 30 | 1.50/300 | 10 | 0.14 | 10 | 4.5 | 200 | 150 | 625 | 1.0 | TO-92 |
| 12 | | MPS3703 | 30 | 30/150 | 50 | 0.25 | 50 | 12 | 100 | 11-407 | 625 | 1.0 | TO-92 |
| 13 | 01 8 | BC126 | 30 | 30/120 | 150 | 0.50 | 150 | _ | R- | _ | 300 | 0.8 | TO-105 |
| 14 | BC737-6 | BC727-6 | 35 | 40/100 | 100 | 0.75 | 1000 | 45 | 100 | g122 S | 1120 | 3.4 | TO-92 |
| 15 | | PE8551 | 35 | 40/180 | 100 | 0.5 | 1000 | 45 | 100 | 221 | 1120 | 3.4 | TO-92 |
| 16 | BC737 | BC727 | 35 | 40/250 | 100 | 0.75 | 1000 | 45 | 100 | 150 | 1120 | 3.4 | TO-92 |
| 17 | BC737-10 | BC727-10 | 35 | 63/160 | 100 | 0.75 | 1000 | 45 | 100 | ET | 1120 | 2.4 | TO-92 |
| 18 | BC737-16 | BC727-16 | 35 | 100/200 | 100 | 0.75 | 1000 | 45 | 100 | 120 | 1120 | 2.4 | TO-92 |
| 19 | 1011.00 | 2N1132 | 35 | 30/90 | 150 | 1.50 | 150 | 45 | 60 | 10128 | 600 | 2.0 | TO-39 |
| 20 | PE8051 | | 35 | 40/180 | 100 | .75 | 1000 | 45 | 100 | A3 <u>22</u> 78 | 1120 | 3.4 | TO-92 |
| 21 | BFY50 | | 35 | 30/- | 150 | 0.20 | 150 | 12 | 50 | VI 22 8 | 800 | 2.86 | TO-39 |
| 22 | MPSA10 | | 40 | 40/400 | 5.0 | nu | 000 | 4.0 | 50 | | 625 | 1.0 | TO-92 |
| 23 | MPSA20 | MPSA70 | 40 | 40/400 | 5.0 | 0.25 | 5.0 | 4.0 | 125 | | 625 | 1.0 | TO-92 |
| 24 | 2N3903 | | 40 | 50/150 | 10 | 0.20 | 10 | 4.0 | 250 | 225 | 625 | | TO-92 |
| 25 | 2N3904 | | 40 | 100/300 | 10 | 0.20 | 10 | 4.0 | 300 | 225 | 625 | 75 25 | TO-92 |
| 26 | 2N3947 | B | 40 | 100/300 | 10 | 0.20 | 10 | 4.0 | 300 | 450 | 360 | 1.2 | TO-18 |
| 27 | BC140 | BC160 | 40 | 40/400 | 100 | 1.40 | 1000 | 25 | 50 | _ | 800 | 5.0 | TO-39 |
| 28 | BC140-6 | BC160-6 | 40 | 40/100 | 100 | 1.40 | 1000 | 25 | 50 | _ | 800 | 5.0 | TO-39 |
| 29 | MPS6530 | | 40 | 40/120 | 100 | 0.50 | 100 | 5.0 | - | _ | 625 | 1.0 | TO-92 |
| 30 | BC140-10 | BC160-10 | 40 | 63/160 | 100 | 1.40 | 1000 | 25 | 50 | _ | 800 | 5.0 | TO-39 |

SMALL SIGNAL

GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| | | CE NO. | VCEO (VCER) | h _{FE} (h _{fe}) | @ lc | V | (sat) | Cob | f _T | toff | TA | T _C | Dookogo |
|------|-----------|--------------|----------------|------------------------------------|------|-------|-------|-----------|----------------|-----------|------|----------------|----------------|
| Item | NPN | arity PNP | V Min | Min/Max | mA | IVIAX | mA | pF Max | Min | ns Max | mW | W W | Package No. |
| 1 | MPS6531 | MPS6534M | 40 | 90/270 | 100 | 0.30 | 100 | 5.0 | -01- | | 625 | 1.0 | TO-92 |
| 2 | BC140-16 | BC160-16 | 40 | 100/250 | 100 | 1.40 | 1000 | 25 | 60 | 800 | 800 | 5.0 | TO-39 |
| 3 | BC140-25 | BC160-25 | 40 | 160/400 | 100 | 1.40 | 1000 | 25 | 50 | - | 800 | 5.0 | TO-39 |
| 4 | 2N3567 | 101 | 40 | 40/120 | 150 | 0.25 | 150 | 20 | 60 | - | 300 | 0.8 | TO-105 |
| 5 | PN3567 | ne kon | 40 | 40/120 | 150 | 0.25 | 150 | 20 | 60 | - | 625 | 1.0 | TO-92 |
| 6 | 2N2218A | 58 891 | 40 | 40/120 | 150 | 0.30 | 150 | 8.0 | 250 | 285 | 800 | 3.0 | TO-39 |
| 7 | 2N2221A | | 40 | 40/120 | 150 | 0.30 | 150 | 8.0 | 250 | 285 | 500 | 1.8 | TO-18 |
| 8 | 2N4400 | | 40 | 50/150 | 150 | 0.40 | 150 | 6.5 | 200 | 255 | 625 | partit. | TO-92 |
| 9 | 2N697 | an lasa | (40) | 40/120 | 150 | 1.50 | 150 | 35 | 50 | _ | 600 | 2.0 | TO-39 |
| 10 | 2N3569 | | 40 | 100/300 | 150 | 0.25 | 150 | 20 | 60 | - | 300 | 0.8 | TO-105 |
| 11 | 2N2219A | | 40 | 100/300 | 150 | 0.30 | 150 | 8.0 | 300 | 285 | 800 | 3.0 | TO-39 |
| 12 | PN2219A | ion I | 40 | 100/300 | 150 | 0.30 | 150 | 8.0 | 300 | 285 | 625 | 1.0 | TO-92 |
| 13 | 2N2222A | | 40 | 100/300 | 150 | 0.30 | 150 | 8.0 | 300 | 285 | 500 | 1.8 | TO-18 |
| 14 | PN2222A | 106 | 40 | 100/300 | 150 | 0.30 | 150 | 8.0 | 300 | 285 | 625 | 1.0 | TO-92 |
| 15 | 2N4401 | 200 1 1 | 40 | 100/300 | 150 | 0.40 | 150 | 6.5 | 250 | 225 | 625 | | TO-92 |
| 16 | of lond | MPS6516 | 40 | 50/100 | 2.0 | 0.50 | 2.0 | 4.0 | (0)(0 | - | 625 | 1.0 | TO-92 |
| 17 | B IO A | BCY70 | 40 | 50/- | 10 | 0.25 | 10 | 6.0 | 200 | - | 360 | 1.2 | TO-18 |
| 18 | 1 6 | 2N3250 | 40 | 50/150 | 10 | 0.25 | 10 | 6.0 | 250 | 225 | 360 | 1.2 | TO-18 |
| 19 | n lea | 2N3905 | 40 | 50/150 | 10 | 0.25 | 10 | 4.5 | 200 | 260 | 625 | _ | TO-92 |
| 20 | or so | BFY64 | 40 | 80/- | 10 | 0.30 | 50 | 10 | 200 | 120 | 700 | 3.0 | TO-39 |
| 21 | | 2N3251 | 40 | 100/300 | 10 | 0.25 | 10 | 6.0 | 300 | 250 | 360 | 1.2 | TO-18 |
| 22 | | PN3251 | 40 | 100/300 | 10 | 0.25 | 10 | 6.0 | 250 | 225 | 625 | 1.0 | TO-92 |
| 23 | GY SIG | 2N3906 | 40 | 100/300 | 10 | 0.25 | 10 | 4.5 | 250 | 300 | 625 | | TO-92 |
| 24 | | 2N2904 | 40 | 40/120 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 600 | 3.0 | TO-39 |
| 25 | | PN2906 | 40 | 40/120 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 625 | 1.0 | TO-92 |
| 26 | | 2N4402 | 40 | 50/150 | 150 | 0.40 | 150 | 8.5 | 150 | 255 | 625 | | TO-92 |
| 27 | Service 1 | 2N4037 | 40 | 50/250 | 150 | 1.40 | 150 | -1 | 60 | | 1000 | | TO-39 |
| 28 | | BC116A | 40 | 80/240 | 150 | 0.40 | 150 | 8.0 | 130 | - | 300 | 0.8 | TO-39 |
| 29 | | 2N2905 | 40 | 100/300 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 600 | 3.0 | TO-39 |
| 30 | | 2N2907 | 40 | 100/300 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 400 | 1.8 | TO-18 |

SMALL SIGNAL

GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| Item | | CE NO. | V _{CEO} (V _{CER}) V Min | h _{FE} (h _{fe}) | @ IC mA | VCE V Max | (sat) @ IC mA | C _{ob} pF Max | f _T MHz Min | toff ns Max | PD TA 25°C 2 mW | T _C 25°C W | Package No. |
|------|---------|--------------|---|------------------------------------|---------|-----------------|---------------------|------------------------------|------------------------|-------------------|--------------------------|-----------------------------|----------------|
| 1 | 1 161 | 2N4403 | 40 | 100/300 | 150 | 0.40 | 150 | 8.5 | 200 | 255 | 625 | 1222 | TO-92 |
| 2 | 1 102 | BCY71 | 45 | 100/600 | 10 | 0.25 | 10 | 6.0 | 200 | 83-0 | 360 | 1.2 | TO-18 |
| 3 | l los | 2N3502 | 45 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 700 | 3.0 | TO-39 |
| 4 | 80 80 | 2N3504 | 45 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 400 | 1.3 | TO-18 |
| 5 | | 2N3644 | 45 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 300 | 0.7 | TO-105 |
| 6 | | PN3644 | 45 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 625 | 1.0 | TO-92 |
| 7 | PN3693 | 007 885 | 45 | 40/160 | 10 | 0 0 | | 3.5 | 200 | _ | 625 | 1.0 | TO-92 |
| 8 | PN3694 | ESS 28% | 45 | 100/400 | 10 | (8. _8) | K Wer | 3.5 | 200 | _ | 625 | 1.0 | TO-92 |
| 9 | BFY56 | 008 | 45 | 30/150 | 150 | 0.30 | 150 | 2.5 | 40 | 625 | 800 | 5.0 | TO-39 |
| 10 | 2N3642 | 000 1 - | 45 | 40/120 | 150 | 0.22 | 150 | 8.0 | 250 | _ | 350 | 0.7 | TO-105 |
| 11 | PN3642 | 265 589 | 45 | 40/120 | 150 | 0.22 | 150 | 8.0 | 250 | _ | 625 | 1.0 | TO-92 |
| 12 | 2N2270 | 282 | 45 | 50/200 | 150 | 0.90 | 150 | 15 | 100 | _ | 1000 | 5.0 | TO-39 |
| 13 | 2N4409 | AUC 1 PRO | 50 | 60/400 | 1.0 | 0.20 | 1.0 | 12 | 60 | _ | 625 | | TO-92 |
| 14 | 2N915 | esus - f app | 50 | 50/200 | 10 | 1.00 | 10 | 3.5 | 250 | _ | 360 | 1.2 | TO-18 |
| 15 | 2N718A | A | (50) | 40/120 | 150 | 1.50 | 150 | 25 | 60 | - | 500 | 1.8 | TO-18 |
| 16 | 2N1613 | | (50) | 40/120 | 150 | 1.50 | 150 | 25 | 80 | 32 | 800 | 3.0 | TO-39 |
| 17 | 2N3053 | nas j | (50) | 50/250 | 150 | 1.40 | 150 | 15 | 100 | | TOE | 5.0 | TO-39 |
| 18 | 2N1711 | 600 800 | (50) | 100/300 | 150 | 1.50 | 150 | 25 | 70 | | 800 | 3.0 | TO-39 |
| 19 | | BFX39 | 55 | 40/- | 100 | 0.50 | 500 | 20 | 100 | 400 | 800 | 4.0 | TO-39 |
| 20 | | 2N4354 | 60 | 50/500 | 10 | 0.15 | 150 | 30 | 100 | _ | 350 | 0.8 | TO-105 |
| 21 | | 2N3250A | 60 | 50/150 | 10 | 0.25 | 10 | 6.0 | 250 | 225 | 360 | 1.2 | TO-18 |
| 22 | | 2N3251A | 60 | 100/300 | 10 | 0.25 | 10 | 6.0 | 300 | 250 | 360 | 1.2 | TO-18 |
| 23 | | 2N4355 | 60 | 100/400 | 10 | 0.15 | 150 | 30 | 100 | 0 | 350 | 0.8 | TO-105 |
| 24 | 108 | PN4355 | 60 | 100/400 | 10 | 0.15 | 150 | 30 | 100 | _ | 625 | 1.0 | TO-92 |
| 25 | | 2N3503 | 60 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 700 | 3.0 | TO-39 |
| 26 | | 2N3505 | 60 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 400 | 1.3 | TO-18 |
| 27 | | 2N3645 | 60 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 300 | 0.7 | TO-105 |
| 28 | 7 180 | PN3645 | 60 | 115/300 | 50 | 0.25 | 50 | 8.0 | 200 | 100 | 300 | 0.7 | TO-105 |
| 29 | BC537-6 | BC527-6 | 60 | 40/100 | 100 | 0.50 | 1000 | 15 | 100 | | 625 | 1.0 | TO-92 |
| 30 | | 2N4030 | 60 | 40/120 | 100 | 0.15 | 150 | 20 | 100 | 7.0 | 800 | 4.0 | TO-39 |

SMALL SIGNAL GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd) (ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| Item | Pola | CE NO. arity PNP | VCEO (VCER) V Min | hFE (h _{fe}) Min/Max | @ IC | ٧ | @ IC mA | C _{ob} pF Max | f _T MHz Min | toff ns Max | TA | T _C 25°C W | Package No. |
|------|------------|------------------|----------------------------|--------------------------------------|------|------|------------|------------------------------|------------------------------|-------------------|-----|-----------------------------|----------------|
| 1 | BC141-6 | BC161-6 | 60 | 40/100 | 100 | 1.40 | 1000 | 25 | 50 | - | 800 | 5.0 | TO-39 |
| 2 | BC537 | BC527 | 60 | 40/400 | 100 | 0.50 | 1000 | 15 | 100 | _ | 625 | 1.0 | TO-92 |
| 3 | BC141 | BC161 | 60 | 40/400 | 100 | 1.40 | 1000 | 25 | 50 | | 800 | 5.0 | TO-39 |
| 4 | | MPSA55 | 60 | 50/- | 100 | 0.25 | 100 | - | 50 | | 625 | 1.0 | TO-92 |
| 5 | BC537-10 | BC527-10 | 60 | 63/160 | 100 | 0.50 | 1000 | 15 | 100 | _ | 625 | 1.0 | TO-92 |
| 6 | BC141-10 | BC161-10 | 60 | 63/160 | 100 | 1.40 | 1000 | 25 | 50 | | 800 | 5.0 | TO-39 |
| 7 | BC537-16 | BC527-16 | 60 | 100/250 | 100 | 0.50 | 1000 | 15 | 100 | - | 625 | 1.0 | TO-92 |
| 8 | BC141-16 | BC161-16 | 60 | 100/250 | 100 | 1.40 | 1000 | 25 | 50 | _ | 800 | 5.0 | TO-39 |
| 9 | | 2N4032 | 60 | 100/300 | 100 | 0.15 | 150 | 20 | 150 | | 800 | 4.0 | TO-39 |
| 10 | BC141-25 | BC161-25 | 60 | 150/400 | 100 | 1.40 | 1000 | 25 | 50 | | 800 | 5.0 | TO-39 |
| 11 | BC537-25 | BC527-25 | 60 | 160/400 | 100 | 0.50 | 1000 | 15 | 100 | | 625 | 1.0 | TO-92 |
| 12 | | 2N2904A | 60 | 40/120 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 600 | 3.0 | TO-39 |
| 13 | | 2N2906A | 60 | 40/120 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 400 | 1.8 | TO-18 |
| 14 | fest a V | 2N2905A | 60 | 100/300 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 600 | 3.0 | TO-39 |
| 15 | | PN2905A | 60 | 100/300 | 150 | 0.40 | 150 | 8.0 | 150 | 110 | 625 | 1.0 | TO-92 |
| 16 | unsel selv | 2N2907A | 60 | 100/300 | 150 | 0.40 | 150 | 8.0 | 200 | 110 | 400 | 1.8 | TO-18 |
| 17 | | PN2907A | 60 | 100/300 | 150 | 0.40 | 150 | 8.0 | 150 | 110 | 625 | 1.0 | TO-92 |
| 18 | 101 | BC143 | 60 | 20/- | 200 | 0.60 | 200 | | M. L. | | 700 | 3.0 | TO-39 |
| 19 | -01F | BC287 | 60 | 20/200 | 500 | 0.45 | 500 | 13(Typ) | 200(Typ) | | 800 | 4.0 | TO-39 |
| 20 | 2N3568 | | 60 | 40/120 | 150 | 0.25 | 150 | 20 | 60 | _ | 300 | 0.8 | TO-105 |
| 21 | PN3568 | | 60 | 100/300 | 150 | 0.18 | 150 | 15 | 250 | | 625 | 1.0 | TO-92 |
| 22 | PE6020 | - Vor | 60 | 100/300 | 150 | 0.18 | 150 | 15 | 250 | _ | 625 | 1.0 | TO-92 |
| 23 | SE6020 | 12.6 | 60 | 100/300 | 150 | 0.18 | 150 | 15 | 250 | 1000 | 300 | 0.8 | TO-105 |
| 24 | BC142 | 0.4 0.5 | 60 | 20/- | 200 | 0.40 | 200 | <u></u> | | | 800 | 5.0 | TO-39 |
| 25 | BC286 | 0.5 0.7 | 60 | 20/180 | 500 | 0.40 | 500 | 12(Typ) | 100(Typ) | | 800 | 4.0 | TO-39 |
| 26 | | BFX41 | 75 | 40/- | 100 | 0.50 | 500 | 20 | 100 | 400 | 800 | 4.0 | TO-39 |
| 27 | | BFX40 | 75 | 60/- | 500 | 0.50 | 500 | 20 | 150 | | 800 | 4.0 | TO-39 |
| 28 | | 2N4356 | 80 | 50/250 | 10 | 0.15 | 150 | 30 | 100 | | 350 | 0.8 | TO-105 |
| 29 | OT SW | BC528-6 | 80 | 40/100 | 100 | 0.50 | 1000 | 15 | 100 | _ | 625 | 1.0 | TO-92 |
| 30 | BC538 | BC528 | 80 | 40/400 | 100 | 0.50 | 1000 | 15 | 100 | | 625 | 1.0 | TO-92 |

SMALL SIGNAL

GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

| | | CE NO. | VCEO (VCER) V | hFE (h _{fe}) | @ IC | V _{CE} V Max | (sat) @ I _C mA | C _{ob} | f _T | t _{off} | T _A | T _C | Package |
|------|----------|----------|---------------------|---------------------------|------|-----------------------------|---------------------------------|-----------------|----------------|------------------|----------------|----------------|---------|
| Item | | PNP | Min | Min/Max | | | | Max | Min | Max | mW | W | No. |
| 1 | MPSA06 | MPSA56 | 80 | 50/- | 100 | 0.25 | 100 | _ | 50 | - | 625 | 1.0 | TO-92 |
| 2 | BC538-10 | BC528-10 | 80 | 63/160 | 100 | 0.50 | 1000 | 15 | 100 | | 625 | 1.0 | TO-92 |
| 3 | | 2N4033 | 80 | 100/300 | 100 | 0.15 | 150 | 20 | 150 | - | 800 | 4.0 | TO-39 |
| 4 | BC538-16 | BC528-16 | 80 | 100/250 | 100 | 0.50 | 1000 | 15 | 100 | - | 625 | 1.0 | TO-92 |
| 5 | BC538-25 | BC528-25 | 80 | 160/400 | 100 | 0.50 | 1000 | 15 | 100 | | 625 | 1.0 | TO-92 |
| 6 | 2N4410 | | 80 | 60/400 | 10 | 0.20 | 1.0 | 12 | 60 | | 625 | - | TO-92 |
| 7 | 2N3020 | | 80 | 40/120 | 150 | 0.20 | 150 | 12 | 80 | - | 800 | 5.0 | TO-39 |
| 8 | 2N1893 | | 80 | 40/120 | 150 | 5.00 | 150 | 15 | 50 | - | 800 | 3.0 | TO-39 |
| 9 | PE6021 | | 80 | 100/300 | 150 | 0.18 | 150 | 15 | 250 | 1000 | 625 | 1.0 | TO-92 |
| 10 | SE6021 | 200 | 80 | 100/300 | 150 | 0.18 | 150 | 15 | 250 | 1000 | 300 | 0.8 | TO-105 |
| 11 | 2N3019 | | 80 | 100/300 | 150 | 0.20 | 150 | 12 | 100 | - | 800 | 5.0 | TO-39 |
| 12 | 2N2405 | | 90 | 60/200 | 150 | 0.50 | 150 | 15 | 200 | - | 800 | 2.4 | TO-39 |

LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING VCEO)

| Item | Pol | CE NO. arity PNP | VCEO V Min | h _{FE} | @ IC mA | hFE Min/Max | @ IC mA | NF dB Max | @ f kHz | NF dB Max | @ f kHz | Package No. |
|------|--------|------------------------|------------------|-----------------|------------|----------------|------------|-----------------|------------|-----------------|------------|----------------|
| 13 | 2N5133 | | 18 | 60/1000 | 1.0 | 0 1000 | | | | _ | | TO-106 |
| 14 | BC208 | pana i | 20 | 90 (Typ)/- | 0.01 | 110/800 | 2.0 | 10 | 1.0 | - | - | TO-106 |
| 15 | BC208A | 1700 | 20 | 90 (Typ)/- | 0.01 | 110/220 | 2.0 | 10 | 1.0 | - | S - | TO-106 |
| 16 | BC208B | BC205B | 20 | 150 (Typ)/- | 0.01 | 200/450 | 2.0 | 10 | 1.0 | _ | == | TO-106 |
| 17 | BC208C | ASE L | 20 | 270 (Typ)/- | 0.01 | 420/800 | 2.0 | 10 | 1.0 | _ | - | TO-106 |
| 18 | BC209 | oon lon | 20 | 150 (Typ)/- | 0.01 | 200/800 | 2.0 | 4.0 | 1.0 | 4.0 | WB | TO-106 |
| 19 | BC209B | 1900 | 20 | 150 (Typ)/- | 0.01 | 200/450 | 2.0 | 4.0 | 1.0 | 4.0 | WB | TO-106 |
| 20 | BC209C | - And | 20 | 270 (Typ)/- | 0.01 | 420/450 | 2.0 | 4.0 | 1.0 | 4.0 | WB | TO-106 |
| 21 | BC319 | BC322 | 20 | 150 (Typ)/- | 0.01 | 200/800 | 2.0 | 4.0 | 1.0 | 4.0 | WB | TO-92 |
| 22 | BC319B | BC322B | 20 | 150 (Typ)/- | 0.01 | 200/450 | 2.0 | 4.0 | 1.0 | 4.0 | WB | TO-92 |
| 23 | BC319C | BC322C | 20 | 270 (Typ)/- | 0.01 | 420/800 | 2.0 | 4.0 | 1.0 | 4.0 | WB | TO-92 |
| 24 | BC522 | Zes L | 20 | _ | 8601 Ts8 | 400/2000 | 2.0 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 25 | BC522C | Taka Lu | 20 | | opar Tu | 400/800 | 2.0 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 26 | BC522D | | 20 | | | 750/1550 | 2.0 | 3.0 | 1.0 | 3.0 | WB | TO-92 |

SMALL SIGNAL
LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS
(BY ASCENDING V CEO) (Cont'd)

| Item | DEVIC Pola NPN | | VCEO V Min | h _{FE} | @ IC mA | hFE Min/Max | @ IC mA | NF dB Max | @ f kHz | NF dB Max | @ f kHz | Package No. |
|------|----------------------|---------|------------------|-----------------|------------|-----------------------|------------|-----------------|------------|--------------------|--------------------|----------------|
| 1 | BC522E | | 20 | 06 -00 | _ | 1200/2200 | 2.0 | 3.0 | 1.0 | 3.0 | WB. | TO-92 |
| 2 | BC113 | M. H. | 20 | 120/- | 0.1 | 200/- | 1.0 | 2.5 (Ty | 0.1 (c | _ | _ | TO-106 |
| 3 | | BC205 | 20 | 80 (Typ)/- | 0.01 | 110/500 | 2.0 | 10 | 1.0 | 0- | - | TO-106 |
| 4 | | BC205A | 20 | 80 (Typ)/- | 0.01 | 110/220 | 2.0 | 10 | 1.0 | 15-0 | - | TO-106 |
| 5 | | BC205C | 20 | 80 (Typ)/- | 0.01 | 400/800 | 2.0 | 10 | 1.0 | - | - | TO-106 |
| 6 | | BC179 | 20 | 120/460 | 2.0 | 88 1 - 0.8 | - | 4.0 | 1.0 | 4.0 | WB | TO-18 |
| 7 | | BC179A | 20 | 120/220 | 2.0 | n -0.0 | - | 4.0 | 1.0 | 4.0 | WB | TO-18 |
| 8 | | BC179B | 20 | 180/460 | 2.0 | # - LE | - | 4.0 | 1.0 | 4.0 | WB | TO-18 |
| 9 | | BC178 | 25 | 70/460 | 2.0 | 00 - 00 | - | 10 | 1.0 | - | | TO-18 |
| 10 | | BC178VI | 25 | 70/140 | 2.0 | | 1-00 | 10 | 1.0 | 1 1 - 0 | _ | TO-18 |
| 11 | | BC178A | 25 | 120/220 | 2.0 | 1 -8 | 1-0 | 10 | 1.0 | VI- | - | TO-18 |
| 12 | | BC178B | 25 | 180/460 | 2.0 | | 0=340 | 10 | 1.0 | 343 | 1 – | TO-18 |
| 13 | BC114 | | 25 | 120/- | 0.1 | 200/- | 10 | 3.0 | 1.0 | - | _ | TO-106 |
| 14 | 2N5089 | 01 | 25 | 400/1200 | 0.1 | 400/- | 10 | 1 - | _ | 2.0 | WB | TO-92 |
| 15 | 2N3565 | | 25 | 70/- | 0.1 | 150/600 | 1.0 | - | | - | | TO-106 |
| 16 | PN3565 | | 25 | 70/- | 0.1 | 150/600 | 1.0 | 4 -0 | | _ | | TO-92 |
| 17 | SE4010 | 88 | 25 | 200/1000 | 1.0 | 10 July 1 | - | 3.0 | 1.0 | _ | 1 - | TO-106 |
| 18 | SE4002 | | 25 | 200/1000 | 1.0 | St - 5 | 0410 | 1 1-0 | _ | _ | 1 + | TO-106 |
| 19 | SE4001 | | 25 | 60/300 | 1.0 | | 024/0 | -n | _ | _ | - | TO-106 |
| 20 | BC115 | | 30 | 50/- | 1.0 | 50/- | 100 | E -0 | | _ | () () | TO-105 |
| 21 | BC318 | BC321 | 30 | 90 (Typ)/- | 0.01 | 110/800 | 2.0 | 6.0 | 1.0 | _ | + | TO-92 |
| 22 | BC318A | BC321A | 30 | 90 (Typ)/- | 0.01 | 110/220 | 2.0 | 6.0 | 1.0 | - | 1945 | TO-92 |
| 23 | BC318B | BC321B | 30 | 150 (Typ)/- | 0.01 | 200/450 | 2.0 | 6.0 | 1.0 | _ | 040 | TO-92 |
| 24 | BC318C | 115 | 30 | 270 (Typ)/- | 0.01 | 420/800 | 2.0 | 6.0 | 1.0 | _ | - | TO-92 |
| 25 | SE4023 | GGE | 30 | 900/- | 0.01 | 1200/2200 | 10 | 3.0 | 1.0 | 8.0 | 0.01 | TO-106 |
| 26 | 2N5088 | 0.9 | 30 | 300/900 | 0.1 | 300/- | 10 | 3 -0 | - | 3.0 | WB | TO-92 |
| 27 | TEW | BC321C | 30 | 80(Typ)/- | 0.01 | 400/800 | 2.0 | 6.0 | 1.0 | - | _ | TO-92 |
| 28 | | 2N5138 | 30 | 50/800 | 0.10 | 50/- | 1.0 | - | - | Si- | - | TO-106 |
| 29 | D LW | PN5138 | 30 | 50/800 | 0.10 | 50/- | 1.0 | _ | - | _ | _ | TO-92 |
| 30 | PT FO | BC153 | 40 | 50/- | 0.10 | 50/- | 10 | 1.0 | 1.0 | - | 1- | TO-106 |
| 31 | P. Shy | BC154 | 40 | 160/- | 0.10 | 160/- | 10 | 2.5 | 1.0 | 123-15 | _ | TO-106 |
| 32 | | 2N4250 | 40 | 250/700 | 0.10 | 250/- | 1.0 | 2.0 | 1.0 | 2.0 | WB | TO-106 |

SMALL SIGNAL

LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

| Item | DEVIC Pola NPN | | VCEO V Min | h _{FE} | @ IC mA | h _{FE} | @ IC mA | NF dB Max | @ f kHz | NF dB Max | @ f kHz | Package No. |
|------|-----------------------|---------|------------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|-------------------|----------------|
| 1 | T EV | PN4250 | 40 | 250/700 | 0.10 | 250/- | 1.0 | 2.0 | 1.0 | 2.0 | WB | TO-92 |
| 2 | 02 40 | 2N4248 | 40 | 50/- | 0.10 | 50/- | 1.0 | m = | 65- | _ | - | TO-106 |
| 3 | 011- | PN4248 | 40 | 50/- | 0.10 | 50/- | 1.0 | 1 0 <u>0</u> | 02_ | 80920 | | TO-92 |
| 4 | BC207 | BC204 | 45 | 90(Typ)/- | 0.01 | 50/450 | 2.0 | 10 | 1.0 | 2000 | _ | TO-106 |
| 5 | BC207A | BC204A | 45 | 90(Typ)/- | 0.01 | 110/220 | 2.0 | 10 | 1.0 | 180(2) | _ | TO-106 |
| 6 | BC207B | BC204B | 45 | 150(Typ)/- | 0.01 | 200/450 | 2.0 | 10 | 1.0 | 200 | _ | TO-106 |
| 7 | BC317 | BC320 | 45 | 90(Typ)/- | 0.01 | 110/450 | 2.0 | 6.0 | 1.0 | | | TO-92 |
| 8 | BC317A | BC320A | 45 | 90(Typ)/- | 0.01 | 110/220 | 2.0 | 6.0 | 1.0 | lersie. | | TO-92 |
| 9 | BC317B | BC320B | 45 | 150(Typ)/- | 0.01 | 200/450 | 2.0 | 6.0 | 1.0 | 8170 | _ | TO-92 |
| 10 | | BC177 | 45 | 70/220 | 2.0 | 100 | _ | 10 | 1.0 | man. | _ | TO-18 |
| 11 | | BC177VI | 45 | 70/140 | 2.0 | 48 | - 201 | 10 | 1.0 | BY 140 | _ | TO-18 |
| 12 | | BC177A | 45 | 120/220 | 2.0 | | 2010 | 10 | 1.0 | 111-1 | _ | TO-18 |
| 13 | OT I | BC177B | 45 | 180/460 | 2.0 | 0 | _ | 10 | 1.0 | | 12 | TO-18 |
| 14 | T - 814 | 2N3964 | 45 | 180/- | 0.001 | 250/500 | 0.01 | 2.0 | 1.0 | 4.0 | 0.1 | TO-18 |
| 15 | 2N930 | | 45 | 100/300 | 0.01 | 600/- | 10 | | 4 | 3.0 | WB | TO-18 |
| 16 | 2N5962 | | 45 | 450/- | 0.01 | 600/1400 | 10 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 17 | SE4021 | - 0 | 45 | 450/• | 0.01 | 600/1400 | 10 | 3.0 | 1.0 | 3.0 | WB | TO-106 |
| 18 | BC523 | | 45 | 180/800 | 2.0 | 100/- | 0.01 | 30- | 89- | _ | S - -1 | TO-92 |
| 19 | BC523B | | 45 | 180/400 | 2.0 | 100/- | 0.01 | 8- | 84 | _ | - | TO-92 |
| 20 | BC523C | | 45 | 380/800 | 2.0 | 100/- | 0.01 | 08 — | 10- | _ | - | TO-92 |
| 21 | BC521 | 10 | 45 | 600/1400 | 10 | 350/- | 0.01 | 3.0 | 1.0 | 125-0 | - | TO-92 |
| 22 | BC521C | - 10 | 45 | 380/800 | 2.0 | 350/- | 0.01 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 23 | BC521D | | 45 | 750/1500 | 2.0 | 350/- | 0.01 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 24 | 2N5210 | | 50 | 200/600 | 0.1 | 250/- | 10 | 3.0 | 1.0 | 2.0 | WB | TO-92 |
| 25 | 2N5209 | 0.8 0 | 50 | 100/300 | 0.1 | 150/- | 10 | 4.0 | 1.0 | 3.0 | WB | TO-92 |
| 26 | 学 】 <i>数</i> 特 | 2N5087 | 50 | 250/800 | 0.10 | 250/- | 10 | 2.0 | 1.0 | 2.0 | WB | TO-92 |
| 27 | | 2N5086 | 50 | 150/500 | 0.10 | 150/- | 10 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 28 | | BC526 | 50 | 40/- | 0.01 | (100/600) | 2.0 | - | | E1 - 3 | | TO-92 |
| 29 | 4 4 | BC526A | 50 | 40/- | 0.01 | (100/300) | 2.0 | M-1 | 1-1 | 10 | WB | TO-92 |
| 30 | | EN3962 | 60 | 60/- | 0.01 | 100/300 | 0.01 | 3.0 | 1.0 | 10 | 0.1 | TO-106 |
| 31 | ON LES | 2N4250A | 60 | 250/700 | 0.10 | 250/- | 1.0 | 2.0 | 1.0 | 2.0 | WB | TO-106 |
| 32 | 07 4 28 | 2N4249 | 60 | 100/300 | 0.10 | 100/- | 1.0 | 3.0 | 1.0 | 3.0 | WB | TO-106 |

SMALL SIGNAL

LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

| Item | | CE NO. arity PNP | V _{CEO} V Min | h _{FE} | @ IC mA | hFE Min/Max | @ IC mA | NF dB Max | @ f kHz | NF dB Max | @ f kHz | Package No. |
|------|--------|------------------------|------------------------------|-----------------|------------|----------------|------------|-----------------|------------|-----------------|------------|----------------|
| 1 | | PN4249 | 60 | 100/300 | 0.10 | 100/- | 1.0 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 2 | | 2N3965 | 60 | 180/- | 0.001 | 250/500 | 0.01 | 2.0 | 1.0 | 4.0 | 0.1 | TO-18 |
| 3 | | BFX37 | 60 | 70/300 | 0.01 | 100/- | 1.0 | 3.0 | 1.0 | 3.0 | WB | TO-18 |
| 4 | | 2N3962 | 60 | 60/- | 0.001 | 100/300 | 0.01 | 3.0 | 1.0 | 10 | 0.1 | TO-18 |
| 5 | 2N5961 | | 60 | 100/- | 0.01 | 150/950 | 10 | 6.0 | 1.0 | - | _ | TO-92 |
| 6 | SE4020 | | 60 | 100/- | 0.01 | 150/950 | 10 | 6.0 | 1.0 | - | | TO-106 |
| 7 | 2N2484 | | 60 | 100/500 | 0.01 | 250/- | 1.0 | 2.0 | 10 | 3.0 | WB | TO-18 |
| 8 | EN2484 | | 60 | 100/500 | 0.01 | 250/- | 1.0 | 2.0 | 10 | 3.0 | WB | TO-106 |
| 9 | PN2484 | | 60 | 100/500 | 0.01 | 250/- | 1.0 | 2.0 | 10 | 3.0 | WB | TO-92 |
| 10 | BC520 | | 60 | 150/700 | 10 | 100/- | 0.01 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 11 | BC520B | | 60 | 180/460 | 2.0 | 100/- | 0.01 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 12 | BC520C | 50.00 | 60 | 380/800 | 2.0 | 100/- | 0.01 | 3.0 | 1.0 | 3.0 | WB | TO-92 |
| 13 | 2N3117 | | 60 | 250/500 | 0.01 | 400/- | 1.0 | 1.0 | 1.0 | 1.0 | 10 | TO-18 |

HIGH VOLTAGE AMPLIFIER TRANSISTORS (BY ASCENDING VCEO)

| | | E GUUT | VCEO | hFE | @ lc | fT | Cob | Р | D | |
|-------|--------|--------|------|---------|------|-----|-----|------------------------|------------------------|---------|
| 98-01 | Pol | CE NO. | V | 98. | mA | MHz | pF | T _A 25°C | T _C 25°C | Package |
| Item | NPN | PNP | Min | Min/Max | | Min | Max | mW | W | No. |
| 14 | | MPSL51 | 100 | 40/250 | 50 | 60 | 8.0 | 625 | 1.0 | TO-92 |
| 15 | MPSL01 | | 120 | 50/300 | 10 | 60 | 8.0 | 814 | 1.79 | TO-92 |
| 16 | 2N5830 | | 120 | 80/500 | 25 | 100 | 40 | 814 | 1.79 | TO-92 |
| 17 | 0.1 | BC530 | 120 | 40/180 | 10 | 100 | 6.0 | 625 | 1.0 | TO-92 |
| 18 | | 2N5400 | 120 | 40/180 | 10 | 100 | 6.0 | 625 | 1.0 | TO-92 |
| 19 | BFY57 | 1000 | 125 | 30/150 | 30 | 40 | 12 | 800 | 5.0 | TO-39 |
| 20 | BC532 | | 140 | 60/250 | 10 | 100 | 6.0 | 814 | 1.79 | TO-92 |
| 21 | 2N5550 | | 140 | 60/250 | 10 | 100 | 6.0 | 814 | 1.79 | TO-92 |
| 22 | 2N3114 | | 150 | 30/120 | 30 | 40 | 9.0 | 800 | 5.0 | TO-39 |
| 23 | | BC531 | 150 | 60/240 | 10 | 100 | 6.0 | 625 | 1.0 | TO-92 |
| 24 | | PN4888 | 150 | 40/400 | 10 | 30 | 4.0 | 625 | 1.0 | TO-92 |
| 25 | | 2N5401 | 150 | 60/240 | 10 | 100 | 6.0 | 625 | 1.0 | TO-92 |
| 26 | 06 | PN4889 | 150 | 80/300 | 10 | 40 | 4.0 | 625 | 1.0 | TO-92 |
| 27 | BF257 | | 160 | 40/150 | 10 | 40 | 3.5 | 1000 | 7.0 | TO-39 |

SMALL SIGNAL

HIGH VOLTAGE AMPLIFIER TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

| | | | VCEO | hFE | @ Ic | fT | Cob | | D _ | |
|------|----------------------|-----------|----------|---------|------|------------|-----------|------------------------------|-----------------------------|----------------|
| Item | DEVIC Pola NPN | | V Min | Min/Max | mA | MHz Min | pF Max | T _A 25°C mW | T _C 25°C W | Package No. |
| 1 | BC533 | | 160 | 80/250 | 10 | 100 | 6.0 | 814 | 1.79 | TO-92 |
| 2 | MPS5551M | | 160 | 80/250 | 10 | 100 | 6.0 | 814 | 1.79 | TO-92 |
| 3 | 2N5831 | | 160 | 80/250 | 10 | 100 | 4.0 | 814 | 1.79 | TO-92 |
| 4 | 2N5832 | | 160 | 175/500 | 10 | 100 | 4.0 | 814 | 1.79 | TO-92 |
| 5 | 2N5833 | | 180 | 50/250 | 10 | 100 | 4.0 | 814 | 1.79 | TO-92 |
| 6 | BF336 | | 180 | 20/- | 30 | 80 | (3.5) | 800 | - | TO-39 |
| 7 | BD115 | | 180 | 22/- | 50 | _ | 3.5 | | 6.0 | TO-39 |
| 8 | BF337 | | 200 | 20/- | 30 | 80 | (3.5) | 800 | | TO-39 |
| 9 | 2N4926 | | 200 | 20/200 | 30 | 30 | (6.0) | 1000 | 7.0 | TO-39 |
| 10 | MPSA43 | | 200 | 50/200 | 30 | 50 | 4.0 | 878 | 2.08 | TO-92 |
| 11 | | MPSA93 | 200 | 30/150 | 30 | 50 | 8.0 | 625 | 1.0 | TO-92 |
| 12 | SE7055 | | 220 | 40/150 | 10 | 40 | (3.5) | 1000 | 7.0 | TO-39 |
| 13 | PE7058 | | 220 | 40/220 | 30 | 40 | 4.0 | 1230 | 4.17 | TO-92 |
| 14 | BF338 | nya na sa | 225 | 20/- | 30 | 80 | (3.5) | 800 | o AT T O | TO-39 |
| 15 | BF258 | | 250 | 40/150 | 10 | 40 | 3.5 | 1000 | 7.0 | TO-39 |
| 16 | 2N4927 | AT | 250 | 20/200 | 30 | 30 | (6.0) | 1000 | 7.0 | TO-39 |
| 17 | 2N5059 | No. | 250 | 30/150 | 30 | 30 | 10 | 1000 | 5.0 | TO-39 |
| 18 | 2N5058 | | 300 | 35/150 | 30 | 30 | 10 | 1000 | 5.0 | TO-39 |
| 19 | MPSA42 | 1 | 300 | 40/200 | 30 | 50 | 3.0 | 878 | 2.08 | TO-92 |
| 20 | PE7059 | | 300 | 40/200 | 30 | 40 | 4.0 | 1230 | 4.17 | TO-92 |
| 21 | BF259 | 300 | 300 | 25/- | 30 | 90 (Typ) | 4.2 | 1000 | 7.0 | TO-39 |
| 22 | | MPSA92 | 300 | 25/- | 30 | 50 | 6.0 | 625 | 1.0 | TO-92 |
| 23 | SE7056 | | 300 | 40/100 | 10 | 40 | (3.0) | 1000 | 7.0 | TO-39 |

NPN RF-IF AMPLIFIER AND OSCILLATOR TRANSISTORS (BY ASCENDING FREQUENCY)

| Item | DEVICE NO. | PG [GMA] (OSC P dB Min | @ f OWER) MHz | V _{CEO} V Min | f _T MHz Min | C _{ob} [C _{ce}] (C _{cb}) pF Max | NF dB Max | @ f MHz | PD TA 25°C mW | Package No. |
|------|---------------|------------------------------------|---------------|---------------------------|------------------------------|--|-----------------|------------|------------------------|----------------|
| 24 | BF160 | | _ | 12 | 400 | 1.2 | -0 | | 310 | TO-106 |
| 25 | BF152 | 28 | 10.7 | 12 | 600 | 1.2 | -61 | - | 310 | TO-106 |

SMALL SIGNAL

NPN RF-IF AMPLIFIER AND OSCILLATOR TRANSISTORS (BY ASCENDING FREQUENCY) (Cont'd)

| Item | DEVICE NO. | PG @ [GMA] (OSC PC dB Min | | V _{CEO} V Min | f _T MHz Min | C _{ob} [C _{ce}] (C _{cb}) pF Max | NF dB Max | @ f MHz | PD TA 25°C mW | Package No. |
|------|---------------|---------------------------------------|-----|------------------------|------------------------------|--|-----------------|------------|------------------------|----------------|
| 1 | BF159 | 22 | 40 | 20 | 600 | 1.2 | 3.5 (Typ) | 60 | 310 | TO-106 |
| 2 | BF163 | 22 | 40 | 40 | 400 | 0.8 (Typ) | 3.0 (Typ) | 40 | 310 | TO-106 |
| 3 | PE5025 | 25 | 45 | 30 | 300 | (1.1) | | _ | 425 (65°C) | TO-92 |
| 4 | FTR118 | 27 | 45 | 20 | 300 | (0.2) (Typ) | 5.0 | 45 | 500 | TO-92 |
| 5 | BF167 | 27 | 45 | 30 | 300 | 0.22 | 3.0 (Typ) | 45 | 175 | TO-72 |
| 6 | PE5030B | 28 | 45 | 40 | 600 | (0.4) | _ | _ | 425 (65°C) | TO-92 |
| 7 | BF222 | 20 (Typ) | 100 | 50 | 400 | 0.4 (Typ) | 5.0 | 0.1 | 310 | TO-72 |
| 8 | 2N3563 | 14 | 200 | 12 | 600 | 1.7 | _ | _ | 2,850 | TO-106 |
| 9 | 2N5179 | 15 | 200 | 12 | 900 | (1.0) | 4.5 | 200 | 250 | TO-72 |
| 10 | 2N918 | 15 | 200 | 15 | 600 | 1.7 | 6.0 | 60 | 200 | TO-72 |
| 11 | PN918 | 15 | 200 | 15 | 600 | 1.7 | 6.0 | 60 | 625 | TO-92 |
| 12 | BF162 | 15 | 200 | 40 | 400 | 1.2 | 5.5 | 200 | 310 | TO-106 |
| 13 | PN3690 | 15 | 200 | 40 | 400 | 1.6 | 5.5 | 200 | 200 | TO-92 |
| 14 | FTR168 | 16 | 200 | 300 | 400 | 0.12 (Typ) | 4.0 | 200 | 500 | TO-92 |
| 15 | 2N5130 | 17 | 200 | 12 | 450 | (1.7) | - | - 25 N | 200 | TO-106 |
| 16 | SE5020 | 20 | 200 | 20 | 375 | 0.5 | 3.3 | 200 | 175 | TO-18 |
| 17 | FTR158 | 20 | 200 | 20 | 300 | (0.20) (Typ) | 3.3 | 200 | 500 | TO-92 |
| 18 | SE5035 | 22 | 200 | 30 | 600 | 0.3 | - | _ | 200 | TO-18 |
| 19 | FTR129 | 22 | 200 | 30 | 600 | (0.20) (Typ) | 4.5 | 200 | 500 | TO-92 |
| 20 | PE5031 | 22 | 200 | 30 | 600 | (0.4) | 4.5 | 200 | 425 (65°C) | TO-92 |
| 21 | 2N2857 | 12.5 | 450 | 15 | 1000 | (1.0) | 4.5 | 450 | 250 | TO-72 |
| 22 | 2N3839 | 12.5 | 450 | 15 | 1000 | (1.0) | 3.4 | 450 | 250 | TO-72 |
| 23 | 2N3880 | 14 | 450 | 15 | 1200 | (.75) | 3.5 | 450 | 250 | TO-72 |
| 24 | 2N5031 | 14 | 450 | 10 | 1000 | (1.5) | 2.5 | 450 | 250 | TO-72 |
| 25 | FMT1090 | 14 (Typ) | 450 | 14 | 1400 (Typ) | (1.2) | 4.0 | 450 | 600 | TO-92 |
| 26 | FMT1091 | 15 (Typ) | 450 | 14 | 1400 (Typ) | (1.2) | 3.5 | 450 | 600 | TO-92 |
| 27 | FMT1190 | 12.5 (Typ) | 450 | 12 | 1400 (Typ) | (1.2) | 5.0 | 450 | 600 | TO-92 |
| 28 | FMT2060 | 15 (Typ) | 450 | 14 | 1000 | (1.0) | 2.8 (Typ) | 450 | 240 | TO-120 |
| 29 | FMT2080 | 13.0 (Typ) | 450 | 14 | 1400 (Typ) | (0.9) | 2.0 (Typ) | 450 | 200 | TO-72 |
| 30 | FMT2085 | 13.0 (Typ) | 450 | 14 | 1400 (Typ) | (1.0) | 2.0 (Typ) | 450 | 400 | TO-92 |

SMALL SIGNAL

NPN RF-IF AMPLIFIER AND OSCILLATOR TRANSISTORS (BY ASCENDING FREQUENCY) (Cont'd)

| Item | DEVICE NO. | PG [GMA] (OSC PC dB Min | OWER) @ f MHz | V _{CEO} V Min | fT MHz Min | C _{ob} [C _{ce}] (C _{cb}) pF Max | NF dB Max | @ f MHz | PD TA 25°C mW | Package No. |
|------|---------------|-------------------------------------|---------------------|---------------------------|------------------|--|-----------------|------------|------------------------|----------------|
| 1 | FMT2090 | 13.0 (Typ) | 450 | 14 | 1400 (Typ) | (0.8) | 2.0 (Typ) | 450 | 240 | TO-120 |
| 2 | 2N5770 | 15 | 500 | 15 | 900 | m - m | 6.0 | 60 | 625 | TO-92 |
| 3 | PN3563 | (30) | 500 | 12 | 600 | 1.7 | 6.0 | 60 | 625 | TO-92 |
| 4 | PN918 | (30) | 500 | 15 | 600 | 1.7 | 6.0 | 60 | 625 | TO-92 |
| 5 | SE3002 | (3.0) | 930 | 12 | 600 | 1.7 | - | - | 200 | TO-106 |
| 6 | FMT1061 | agair - i | - | 14 | 1000 | (1.0) | 3.5 | 450 | 250 | TO-72 |
| 7 | FMT1061A | 13.8 (Typ) | 1000 | 14 | 1300 | (1.0) | 3.0 | 450 | 250 | TO-72 |
| 8 | FTR129A | _ | - | 35 | 1000 (Typ) | (0.40) (Typ) | -66 | - | 500 | TO-92 |
| 9 | 2N3570 | - 068 | 7 (8) | 15 | 1500 | (0.75) | 7.0 | 1000 | 250 | TO-72 |
| 10 | 2N3571 | <u> </u> | - | 15 | 1200 | (0.85) | 4.0 | 450 | 250 | TO-72 |
| 11 | 2N3572 | Tros. | | 13 | 1000 | (0.85) | 6.0 | 450 | 250 | TO-72 |
| 12 | 2N3683 | T one | 7-3 | 12 | 1000 | 2.0 | 4.0 | 200 | 250 | TO-72 |

DUAL TRANSISTORS (BY ASCENDING VCEO)

| | DEVIC | CE NO. | VCEO | hFE | @ Ic | Mate | ching | |
|------|------------|--------------|----------|----------|------|-----------|-----------|----------------|
| Item | Pol NPN | arity PNP | V Min | Min/Max | mA | hFE % | VBE mV | Package No. |
| Item | INFIN | PNP | 141111 | Wiln/Wax | 18 | 70 | mv | |
| 13 | MD2369A | 003 | 15 | 40/120 | 10 | 10 | 5.0 | TO-78 |
| 14 | MD2369B | | 15 | 40/120 | 10 | 20 | 10 | TO-78 |
| 15 | MD918A | 200 A | 15 | 50/- | 1.0 | 10 | 5.0 | TO-78 |
| 16 | MD918B | | 15 | 50/- | 1.0 | 20 | 5.0 | TO-78 |
| 17 | MD2218A | COLD TO B | 40 | 40/120 | 150 | 100 m | 91 1- 5 | TO-78 |
| 18 | MD2219A | | 40 | 100/300 | 150 | 069 — - 2 | e: 1- a | TO-78 |
| 19 | 2N2913 | | 45 | 60/240 | 0.01 | | - | TO-78 |
| 20 | 2N2917 | 6 ×60 | 45 | 60/240 | 0.01 | 20 | 10 | TO-78 |
| 21 | 2N2915 | 85 A39 | 45 | 60/240 | 0.01 | 10 | 3.0 | TO-78 |
| 22 | 2N2914 | (s)5 8. | 45 | 150/300 | 0.01 | 138 - m/s | let He | TO-78 |
| 23 | 2N2918 | 064 G | 45 | 150/300 | 0.01 | 20 | 5.0 | TO-78 |
| 24 | nt ove | 2N4020 | 45 | 250/600 | 0.01 | 20 | 5.0 | TO-78 |
| 25 | E F DOS | 2N4023 | 45 | 250/600 | 0.1 | 10 | 3.0 | TO-78 |
| 26 | *2N2919 | anu luva | 60 | 60/240 | 0.01 | 10 | 3.0 | TO-39 |

^{*}Also available in JAN, JTX and TXV.

SMALL SIGNAL

DUAL TRANSISTORS (BY ASCENDING VCEO) (Cont'd)

| | DEVIC | | VCEO | hFE | @ IC | | ching VBE | Package |
|------|------------------|--------------|------|---------|------|----------|--------------------|---------|
| Item | NPN Pola | PNP | Min | Min/Max | MA | hFE % | mV | No. |
| 1 | *2N2920 | al works the | 60 | 150/300 | 0.01 | 10 | 3.0 | TO-78 |
| 2 | *2N2920A | alwell Ma | 60 | 150/300 | 0.01 | 10 | 1.5 | TO-78 |
| 3 | | 2N3800 | 60 | 150/450 | 0.1 | <u> </u> | BANAT | TO-71 |
| 4 | graph recognist. | 2N3806 | 60 | 150/450 | 0.1 | 32054 | Lipsy <u>ll</u> ix | TO-78 |
| 5 | MA NEGROUP | 2N3802 | 60 | 150/450 | 0.1 | 20 | 8.0 | TO-71 |
| 6 | ordine and the | 2N3808 | 60 | 150/450 | 0.1 | 20 | 8.0 | TO-78 |
| 7 | envis bas car | 2N3804 | 60 | 150/450 | 0.1 | 10 | 5.0 | TO-71 |
| 8 | SIME BIRE ON | 2N3810 | 60 | 150/450 | 0.1 | 10 | 5.0 | TO-78 |
| 9 | igi and Suite | 2N4025 | 60 | 250/600 | 0.1 | 10 | 3.0 | TO-78 |
| 10 | ens or danger | 2N3805 | 60 | 300/900 | 0.1 | 10 | 5.0 | TO-71 |
| 11 | part resident | 2N3811 | 60 | 300/900 | 0.1 | 10 | 5.0 | TO-78 |
| 12 | Hard Sale Said | 2N4017 | 80 | 100/350 | 0.01 | | GNGT 6 | TO-78 |

UNMATCHED QUAD TRANSISTORS (BY ASCENDING VCEO)

| | | CE NO. arity | V _{CEO} | hFE | @ IC mA | VCE (sa | Package | |
|------|---------|-----------------|------------------|---------|------------|---------|---------|--------|
| Item | NPN | PNP | Min | Min/Max | | Max | | No. |
| 13 | FPQ3724 | FPQ3467 | 40 | 30/- | 500 | 0.5 | 500 | TO-116 |
| 14 | FPQ2222 | FPQ2907 | 40 | 100/- | 150 | 0.4 | 150 | TO-116 |
| 15 | FPQ3725 | FPQ3468 | 50 | 20/- | 500 | 0.5 | 500 | TO-116 |

NPN DARLINGTON TRANSISTORS (BY ASCENDING VCEO)

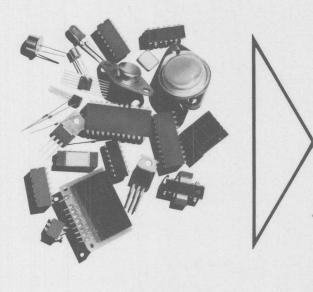
| Item | DEVICE NO. | VCEO V Min | h _{FE} | @ IC | VCE (sat V Max |) @ IC mA | Package No. |
|------|---------------|------------------|-----------------|------|----------------------|--------------|----------------|
| 16 | MPSA12 | 20 | 20000/- | 10 | 1.0 | 10 | TO-92 |
| 17 | MPSA13 | 30 | 5000/- | 10 | 1.5 | 100 | TO-92 |
| 18 | MPSA14 | 30 | 10000/- | 10 | 1.5 | 100 | TO-92 |
| 19 | 2N997 | 40 | 7000/70000 | 100 | 1.6 | 100 | TO-18 |
| 20 | 2N2725 | 45 | 2000/10000 | 10 | 1.0 | 10 | TO-72 |

^{*}Also available in JAN, JTX and TXV.

SMALL SIGNAL

NPN AND PNP TRANSISTOR DICE (BY APPLICATION)

| Item | DEVICE NO. | Pol. | Basic Standard Device | VCEO V Min | nA Max | @ VCB | h _{FE} | @ IC mA | Chip Size Mils | Basic Application |
|------|---------------|------|-----------------------------|------------------|-----------|-------|-----------------|------------|----------------------|---------------------------|
| 1 | DN2484 | NPN | 2N2484 | 60 | 20 | 45 | 250/- | 1.0 | 17.5x17.5 | Low Level, Low Noise Amp. |
| 2 | DN3962 | PNP | 2N3962 | 60 | 20 | 50 | 100/450 | 1.0 | 11x24 · | Low Level, Low Noise Amp. |
| 3 | DN918 | NPN | 2N918 | 15 | 20 | 15 | 20/- | 3.0 | 9x14 | R. F. Amp. |
| 4 | DN3904 | NPN | 2N3904 | 40 | 50 | 30 | 100/300 | 10 | 11x18 | General Purpose Amp. |
| 5 | DN3906 | PNP | 2N3906 | 40 | 50 | 30 | 100/300 | 10 | 11x20 | General Purpose Amp. |
| 6 | DN2222A | NPN | 2N2222A | 40 | 20 | 60 | 100/300 | 100 | 15x16.5 | G. P. Amp. and Switch |
| 7 | DN2907 | PNP | 2N2907 | 40 | 20 | 50 | 100/300 | 100 | 19x19 | G. P. Amp. and Switch |
| 8 | DN3019 | NPN | 2N3019 | 80 | 20 | 90 | 100/300 | 100 | 30x30 | G. P. Amp. and Switch |
| 9 | DN4033 | PNP | 2N4033 | 80 | 50 | 60 | 100/300 | 100 | 24x30 | G. P. Amp. and Switch |
| 10 | DN3930 | PNP | 2N3930 | 180 | 20 | 100 | 80/300 | 10 | 22x22 | HighVoltageAmp and Switch |
| 11 | DN2369A | NPN | 2N2369A | 15 | 400 | 20 | 40/120 | 10 | 9x14 | High Speed Sat. Switch |
| 12 | DN4209 | PNP | 2N4209 | 15 | 20 | 8.0 | 35/- | 1.0 | 9.5x14.5 | High Speed Sat. Switch |
| 13 | DN3014 | NPN | 2N3014 | 20 | 300 | 20 | 30/120 | 30 | 13.5x13.5 | High Speed Sat. Switch |
| 14 | DN3725 | NPN | 2N3725 | 50 | 1700 | 60 | 60/150 | 100 | 27x27 | High Speed Core Driver |
| 15 | DN3468 | PNP | 2N3468 | 50 | 100 | 30 | 25/- | 100 | 27x33 | High Speed Core Driver |



| | 1 |
|--|----|
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OPTO

FAIRCHILD OPTOELECTRONICS

LED VISIBLE LAMPS

| Item | DEVICE NO. | Lens Characteristic | IF mA Typ | Luminous Intensity IF = 20mA mcd Typ | V _F I _F = 20mA V Typ | Package No. |
|------|-------------------------|------------------------|-----------------|--|--|----------------|
| 1 | FLV104A | Clear | 100 | (4.0mW/sr) | 2.0 | Opto-8 |
| 2 | FLV110 | Red Diffused | 20 | 2.0 | 1.7 | Opto-5 |
| 3 | FLV111 | Clear Point Source | 20 | 2.0 | 1.7 | Opto-5 |
| 4 | FLV112 | Clear Diffused | 20 | 2.0 | 1.7 | Opto-5 |
| 5 | FLV117 | Red Diffused | 50 | 1.0 | 1.9 | Opto-5 |
| 6 | FLV140 | Red Diffused | 20 | 2.0 | 1.7 | Opto-4 |
| 7 | FLV141 Red Point Source | | 20 | 2.0 | 1.7 | Opto-4 |
| 8 | FLV150 Red Diffused | | 20 | 2.0 | 1.7 | Opto-4 |
| 9 | FLV151 Red Point Source | | 20 | 2.0 | 1.7 | Opto-4 |
| 10 | FLV152 | Red Point Source | 20 | 3.0 | 1.7 | Opto-4 |
| 11 | | | 20 | 2.0 | 1.7 | Opto-7 |
| 12 | FLV161 | Red Point Source | 20 | 2.0 | 1.7 | Opto-7 |
| 13 | FLV251 | Red Point Source | 10 | 5.0 | 2.1 | Opto-4 |
| 14 | FLV252 | Red Point Source | 10 | 8.0 | 2.1 | Opto-4 |
| 15 | FLV310 | Green Diffused | 20 | 3.2 | 2.3 | Opto-5 |
| 16 | FLV311 | Green Point Source | 20 | 3.2 | 2.3 | Opto-5 |
| 17 | FLV315 | Green Diffused | 20 | 2.5 | 3.0 | Opto-5 |
| 18 | FLV340 | Green Diffused | 20 | 3.2 | 2.3 | Opto-4 |
| 19 | FLV341 | Green Point Source | 20 | 3.2 | 2.3 | Opto-4 |
| 20 | FLV350 | Green Diffused | 20 | 3.2 | 2.3 | Opto-6 |
| 21 | FLV351 | Green Point Source | 20 | 3.2 | 2.3 | Opto-6 |
| 22 | FLV355 | Green Diffused | 20 | 2.5 | 3.0 | Opto-6 |
| 23 | FLV360 | Green Diffused | 20 | 3.2 | 2.3 | Opto-7 |
| 24 | FLV361 | Green Point Source | 20 | 3.2 | 2.3 | Opto-7 |
| 25 | FLV365 | Green Diffused | 20 | 2.5 | 3.0 | Opto-7 |
| 26 | FLV410 | Yellow Diffused | 20 | 3.2 | 2.3 | Opto-5 |
| 27 | FLV411 | Yellow Point Source | 20 | 3.2 | 2.3 | Opto-5 |
| 28 | FLV440 | Yellow Diffused | 20 | 3.2 | 2.3 | Opto-4 |
| 29 | FLV441 | Yellow Point Source | 20 | 3.2 | 2.3 | Opto-4 |

4

OPTO

LED VISIBLE LAMPS (Cont'd)

| Item | DEVICE NO. | Lens Characteristic | IF mA Typ | Luminous Intensity I _F = 20mA mcd Typ | VF V Typ | Package No. |
|------|--|------------------------|-----------------|--|----------------|----------------|
| 1 | FLV450 | Yellow Diffused | 20 | 3.2 | 2.3 | Opto-6 |
| 2 | FLV451 | Yellow Point Source | 20 | 3.2 | 2.3 | Opto-6 |
| 3 | FLV460 | Yellow Diffused | 20 | 3.2 | 2.3 | Opto-7 |
| 4 | FLV461 | Yellow Point Source | 20 | 3.2 | 2.3 | Opto-7 |
| 5 | FLV510 | Red Diffused | 10 | 3.0 | 1.9 | Opto-5 |
| 6 | FLV511 | Red Point Source | 10 | 3.0 | 1.9 | Opto-5 |
| 7 | FLV540 | Red Diffused | 10 | 3.0 | 1.9 | Opto-4 |
| 8 | FLV541 | Red Point Source | 10 | 3.0 | 1.9 | Opto-4 |
| 9 | FLV550 Red Diffused | | 10 | 3.0 | 1.9 | Opto-6 |
| 10 | | | 10 | 3.0 | 1.9 | Opto-6 |
| 11 | REO TROUBLES AND EXPEDITIONS OF THE PROPERTY O | | 10 | 3.0 | 1.9 | Opto-7 |
| 12 | FLV561 Red Point Source | | 10 | 3.0 | 1.9 | Opto-7 |
| 13 | MV5050 | Clear Point Source | 20 | 2.0 | 1.7 | Opto-9 |
| 14 | MV5051 | Clear Diffused | 20 | 1.6 | 1.7 | Opto-9 |
| 15 | MV5052 | Red Point Source | 20 | 2.0 | 1.7 | Opto-9 |
| 16 | MV5053 | Red Diffused | 20 | 1.6 | 1.7 | Opto-9 |
| 17 | MV5054-1 | Red Semi-Diffused | 20 | 2.0 | 1.7 | Opto-10 |
| 18 | MV5054-2 | Red Semi-Diffused | 20 | 3.0 | 1.7 | Opto-10 |
| 19 | MV5054-3 | Red Semi-Diffused | 20 | 4.0 | 1.7 | Opto-10 |
| 20 | MV5152 | Amber Point Source | 20 | 16.0 | 1.9 | Opto-10 |
| 21 | MV5153 | Amber Diffused | 20 | 4.0 | 1.9 | Opto-9 |
| 22 | MV5154 | Amber Semi-Diffused | 20 | 8.0 | 1.9 | Opto-10 |
| 23 | MV5252 | Green Point Source | 20 | 6.0 | 2.3 | Opto-10 |
| 24 | MV5253 | Green Diffused | 20 | 1.5 | 2.3 | Opto-9 |
| 25 | MV5254 | Green Semi-Diffused | 20 | 3.0 | 2.3 | Opto-10 |
| 26 | MV5352 | Yellow Point Source | 20 | 10.0 | 2.3 | Opto-10 |
| 27 | MV5353 | 3 Yellow Diffused | | 6.0 | 2.3 | Opto-9 |
| 28 | MV5354 | Yellow Semi-Diffused | 20 | 10.0 | 2.3 | Opto-10 |
| 29 | MV5752 | Red Point Source | 20 | 16.0 | 1.9 | Opto-10 |
| 30 | MV5753 | Red Diffused | 20 | 4.0 | 1.9 | Opto-9 |

A

FAIRCHILD OPTOELECTRONICS

OPTO

LED VISIBLE LAMPS (Cont'd)

| Item | DEVICE NO. | Lens Characteristic | I _F mA Typ | Luminous Intensity I _F = 20mA mcd Typ | V _F V Typ | Package No. |
|------|------------|------------------------|-----------------------------|--|----------------------------|----------------|
| 10 | MV5754 | Red Semi-Diffused | 20 | 8.0 | 1.9 | Opto-10 |
| 2 | TIL209A | Red Diffused T-1 | 20 | 2.0 | 1.7 | Opto-11 |
| 3 | TIL211 | Green Diffused T-1 | 20 | 0.5 | 0081.7 | Opto-11 |
| 4 | TIL213 | Yellow Diffused T-1 | 20 | 0.5 | 1.7 | Opto-11 |

LED LAMP MOUNTING HARDWARE

| Item | DEVICE NO. | Panel Thickness | Panel Hole | Description | Package No. | |
|------|-------------------------------|--|-----------------------------------|---|----------------|--|
| 5 | FLS010 | .060 to .250 | .265 ±.002 | Single-Part Construction (Flat Black Finish) | | |
| 6 | 5 FLS011 0.187 .250 ±.003 | | | 3-Piece Construction: Hex Nut, Threaded Barrel and Bezel (Bezel in Silver Finish) | Opto-2 | |
| 7 | FLS012 | 250 3-Piece Construction: Hex Nut, Threaded ±.003 Barrel and Bezel (Bezel in Black Finish) | | Opto-2 | | |
| 8 | MP52 0.125 250 ±.003 Mounting | | Mounting Clip for MV Series Lamps | Opto-3 | | |

7-SEGMENT NUMERIC DISPLAYS

| Item | DEVICE NO. | Character Height Inches | Polarity | Color | Description | Decimal Point | Peak Current/Seg Pulse = 100μs mA | VF IF = 20mA/Seg V | Luminous Intensity/Seg IF = 20mA | Logic/Connection Diagram | Package No. |
|------|------------|-------------------------------|----------|-------|-------------------|---------------|---|--------------------------|--|-----------------------------|-------------|
| 9 | FND350 | 0.362 | CA | Red | 7-Segment Display | RH | 200 | 1.7 | 450 | 01 | Opto-12 |
| 10 | FND351 | 0.362 | CA | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 450 | 02 | Opto-12 |
| 11 | FND357 | 0.362 | CC | Red | 7-Segment Display | RH | 200 | 1.7 | 450 | 01 | Opto-12 |
| 12 | FND358 | 0.362 | CC | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 450 | 02 | Opto-12 |
| 13 | FND360 | 0.362 | CA | Red | 7-Segment Display | RH | 200 | 1.7 | 900 | 01 | Opto-12 |
| 14 | FND361 | 0.362 | CA | Red | Overflow ± Digit | RH | 200 | 1.7 | 900 | 02 | Opto-12 |
| 15 | FND367 | 0.362 | CC | Red | 7-Segment Display | RH | 200 | 1.7 | 900 | 01 | Opto-12 |
| 16 | FND368 | 0.362 | CC | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 900 | 02 | Opto-12 |
| 17 | FND500 | 0.500 | СС | Red | 7-Segment Display | RH | 200 | 1.7 | 600 | 03 | Opto-13 |
| 18 | FND501 | 0.500 | СС | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 600 | 04 | Opto-13 |
| 19 | FND507 | 0.500 | CA | Red | 7-Segment Display | RH | 200 | 1.7 | 600 | 03 | Opto-13 |
| 20 | FND508 | 0.500 | CA | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 600 | 04 | Opto-13 |

OPTO

7-SEGMENT NUMERIC DISPLAYS (Cont'd)

| Item | DEVICE NO. | Character Height Inches | Polarity | Color | Description | Decimal Point | Peak Current/Seg Pulse = $100\mu s$ mA | ν _F 1 _F = 20mA/Seg ν | Luminous Intensity/Seg IF = 20mA μcd | Logic/Connection Diagram | Package No. |
|------|------------|-------------------------------|----------|-------|------------------------|---------------|--|--|---|-----------------------------|-------------|
| 1 | FND530 | 0.500 | СС | Grn | 7-Segment Display | RH | 80 | 2.2 | 2000 | 03 | Opto-13 |
| 2 | FND531 | 0.500 | СС | Grn | Overflow ±1 Digit | RH | 80 | 2.2 | 2000 | 04 | Opto-13 |
| 3 | FND537 | 0.500 | CA | Grn | 7-Segment Display | RH | 80 | 2.2 | 2000 | 03 | Opto-13 |
| 4 | FND538 | 0.500 | CA | Grn | Overflow ±1 Digit | RH | 80 | 2.2 | 2000 | 04 | Opto-13 |
| 5 | FND540 | 0.500 | СС | Yel | 7-Segment Display | RH | 80 | 2.2 | 2000 | 03 | Opto-13 |
| 6 | FND541 | 0.500 | СС | Yel | Overflow ± Digit | RH | 80 | 2.2 | 2000 | 04 | Opto-13 |
| 7 | FND547 | 0.500 | CA | Yel | 7-Segment Display | RH | 80 | 2.2 | 2000 | 03 | Opto-13 |
| 8 | FND548 | 0.500 | CA | Yel | Overflow ± Digit | RH | 80 | 2.2 | 2000 | 04 | Opto-13 |
| 9 | FND550 | 0.500 | CC | Amb | 7-Segment Display | RH | 80 | 2.2 | 2000 | 03 | Opto-13 |
| 10 | FND551 | 0.500 | CC | Amb | Overflow ±1 Digit | RH | 80 | 2.2 | 2000 | 04 | Opto-13 |
| 11 | FND557 | 0.500 | CA | Amb | 7-Segment Display | RH | 80 | 2.2 | 2000 | 03 | Opto-13 |
| 12 | FND558 | 0 .500 | CA | Amb | Overflow ±1 Digit | RH | 80 | 2.2 | 2000 | 04 | Opto-13 |
| 13 | FND560 | 0.500 | СС | Red | 7-Segment Display | RH | 200 | 2.2 | 1200 | 03 | Opto-13 |
| 14 | FND561 | 0 .500 | СС | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 1200 | 04 | Opto-13 |
| 15 | FND567 | 0.500 | CA | Red | 7-Segment Display | RH | 200 | 1.7 | 1200 | 03 | Opto-13 |
| 16 | FND568 | 0.500 | CA | Red | Overflow ±1 Digit | RH | 200 | 1.7 | 1200 | 04 | Opto-13 |
| 17 | FND800 | 0.800 | CC | Red | 7-Segment Display | RH | 200 | 1.7 | 600 | 05 | Opto-14 |
| 18 | FND807 | 0.800 | CA | Red | 7-Segment Display | RH | 200 | 1.7 | 600 | 05 | Opto-14 |
| 19 | FND847 | 0.800 | CA | Red | 7-Segment Display | LH | 200 | 1.7 | 600 | 06 | Opto-14 |
| 20 | FND850 | 0.800 | CC | Red | 7-Segment Display | LH | 200 | 1.7 | 600 | 06 | Opto-14 |
| 21 | FND6710 | 0.560 | CA | Red | Dual Digit Display | RH | 200 | 1.7 | 500 | 010 | Opto-16 |
| 22 | FND6730* | 0.560 | CA | Red | 11/2 Digit ±18 Display | RH | 200 | 1.7 | 500 | 9.23 | BH F ST |
| 23 | FND6740 | 0.560 | СС | Red | Dual Digit Display | RH | 200 | 1.7 | 500 | 010 | Opto-16 |
| 24 | FND6750* | 0.560 | СС | Red | 1/2 Digit ±18 Display | RH | 200 | 1.7 | 500 | 1 05 | CEPT D |
| 25 | MAN71A | 0.300 | CA | Red | 7-Segment Display | RH | 200 | 1.7 | 450 | 07 | Opto-15 |
| 26 | MAN72A | 0.300 | CA | Red | 7-Segment Display | LH | 200 | 1.7 | 450 | 07 | Opto-15 |
| 27 | MAN73A | 0 :300 | CA | Red | Overflow ±1 Digit | None | 200 | 1.7 | 450 | 08 | Opto-15 |
| 28 | MAN74A | 0.300 | СС | Red | 7-Segment Display | RH | 200 | 1.7 | 450 | 09 | Opto-15 |

^{*} Available 2nd Half, 1978

OPTO

7-SEGMENT NUMERIC DISPLAY ARRAYS

| Item | DEVICE NO. | Digits | AM/PM | V _F 1 _F = 8.0 mA V Typ | | inous ity/Seg @mA | Seg/Seg Match Typ | No. of Pins | Logic/ Connection Diagram | Package No. |
|------|------------------------|--------|-------|---|-----|-------------------------|-------------------------|-------------------|---------------------------------|----------------|
| 1 | FCS6400 | 4 | No | 1.7 | 200 | 10 | ±33% | 34 | 017 | Opto-24 |
| 2 | FCS6401 | 31/2 | Yes | 1.7 | 200 | 10 | ±33% | 34 | 018 | Opto-25 |
| 3 | FCS8000 | 31/2 | Yes | 1.65 | 350 | 8.0 | ±33% | 34 | 011 | Opto-17 |
| 4 | FCS8024 | 4 | No | 1.65 | 350 | 8.0 | ±33% | 34 | 012 | Opto-18 |
| 5 | FNA3420 ⁽³⁾ | 4 | No | 1.7 | 600 | 20 | ±33% | 13 | 100000 | |
| 6 | FNA5420 | 4 | No | 1.7 | 600 | 20 | ±33% | 13 | 013 | Opto-20 |
| 7 | FNA5421 | 31/2 | No | 1.7 | 600 | 20 | ±33% | 13 | 014 | Opto-21 |
| 8 | FNA5427 | 4 | No | 1.7 | 600 | 20 | ±33% | 13 | 013 | Opto-20 |
| 9 | FNA5428 | 31/2 | No | 1.7 | 600 | 20 | ±33% | 13 | 014 | Opto-21 |
| 10 | FNA5520 | 5 | No | 1.7 | 600 | 20 | ±33% | 14 | 015 | Opto-22 |
| 11 | FNA5521 | 41/2 | No | 1.7 | 600 | 20 | ±33% | 14 | 016 | Opto-23 |
| 12 | FNA5527 | 5 | No | 1.7 | 600 | 20 | ±33% | 14 | 015 | Opto-22 |
| 13 | FNA5528 | 41/2 | No | 1.7 | 600 | 20 | ±33% | 14 | 016 | Opto-23 |

LIQUID CRYSTAL DISPLAYS

| Item | DEVICE NO. (1,2) | Description | Digit Height Hr./Min | (mm) s | Logic/Connection Diagram | Package No. |
|------|--------------------------|--------------------|-------------------------|-----------|--|------------------------|
| 14 | FLC3503-1 | Ladies 31/2 Digit | 3.3 | _ | O19 | Opto-38 |
| 15 | FLC3505-1 | Mens 31/2 Digit | 4.6 | _ | O20 | Opto-39 |
| 16 | FLC3505-2 | Mens 31/2 Digit | 5.1 | | 021 | Opto-40 |
| 17 | FLC3507-1 ⁽³⁾ | Mens 31/2 Digit | 6.7 | | | 921 1 |
| 18 | FLC5505-1 | Mens 51/2 Digit | 5.1 | 3.6 | 022 | Opto-41 |
| 19 | FLC5505-3 ⁽³⁾ | Mens 51/2 Digit | 5.3 | 3.8 | 130C L L 250 | 991 8_ |
| 20 | FLC6005-2 | Mens 6 Digit | 4.6 | 3.1 | 023 | Opto-42 |
| 21 | FLC6005-3 ⁽³⁾ | Mens 6 Digit | 4.5 | 3.1 | fueluo Mueasa I | MADIC REPORTED IN |
| 22 | FLC8004-1 ⁽³⁾ | 8 Digit Calculator | 3.5 | _ | 18 O 20 to -0.00 0.80 | _ |
| 23 | FLC8006-1 ⁽³⁾ | 8 Digit Calculator | 6.0 | OF SUCKES | is the special control of the special of the specia | 425 40 20 4 |

1. With polarizers attached, device code is followed by -P.

2. Electrical Characteristics:

Operating voltage range Visual threshold voltage (90% on)

Operating frequency range
Operating temperature range

2.8V Max
25Hz to 1KHz
-10° to 80°C

3V to 6V

3. Consult factory.

OPTO

COUPLERS—TRANSISTOR OUTPUT

| pastag No. | | Seg/Seg No. Eaten of Typ Pins | MAX RATINGS (a) IA = 25°C | | | | | | | |
|---------------|-------------------------|-------------------------------------|---------------------------|------|---------------------|----------|---------------------|--|--|--|
| pto-2 | | 46 8655 | Transis | tor | Di | ode | FC\$8410 | | | |
| Item | DEVICE NO. | P _D mW | IC mA | VCEO | V _R V | IF mA | V _{ISO} kV | | | |
| 1 | FCD810 ⁽¹⁾ | 250 | 25 | 20 | 3.0 | 60 | 1.5ac | | | |
| 2 | FCD810A(1) | 250 | 25 | 20 | 3.0 | 60 | 1.5 | | | |
| 3 | FCD810B ⁽¹⁾ | 250 | 25 | 20 | 3.0 | 60 | 2.5 | | | |
| 4 | FCD810C(1) | 250 | 25 | 20 | 3.0 | 60 | 5.0 | | | |
| 5 | FCD810D ⁽¹⁾ | 250 | 25 | 20 | 3.0 | 60 | 6.0 | | | |
| 6 | FCD820 ^(1,3) | 250 | 25 | 30 | 3.0 | 60. | 1.5ac | | | |
| 7 | FCD820A ⁽¹⁾ | 250 | 25 | 30 | 3.0 | 60 | 1.5 | | | |
| 8 | FCD820B (1) | 250 | 25 | 30 | 3.0 | 60 | 2.5 | | | |
| 9 | FCD820C(1) | 250 | 25 | 30 | 3.0 | 60 | 5.0 | | | |
| 10 | FCD820D (1) | 250 | 25 | 30 | 3.0 | 60 | 6.0 | | | |
| 11 | FCD825 (1,5) | 250 | 25 | 30 | 3.0 | 60 | 1.5ac | | | |
| 12 | FCD825A(1,5) | 250 | 25 | 30 | 3.0 | 60 | 1.5 | | | |
| 13 | FCD825B (1,5) | 250 | 25 | 30 | 3.0 | 60 | 2.5 | | | |
| 14 | FCD825C (1,5) | 250 | 25 | 30 | 3.0 | 60 | 5.0 | | | |
| 15 | FCD825D (1,5) | 250 | 25 | 30 | 3.0 | 60 | 6.0 | | | |
| 16 | FCD830 ^(2,3) | 250 | 25 | 30 | 3.0 | 60 | 1.5 | | | |
| 17 | FCD830A(2) | 250 | 25 | 30 | 3.0 | 60 | 1.5ac | | | |
| 18 | FCD830B (2) | 250 | 25 | 30 | 3.0 | 60 | 2.5 | | | |
| 19 | FCD830C (2) | 250 | 25 | 30 | 3.0 | 60 | 5.0 | | | |

^{1.} Standard transistor output

^{2.} High speed transistor output guaranteed 2.0 μs max t_r and t_f with 100 Ω RL 8.0 μs typ at 1K Ω RL

^{3.} CTR guaranteed with transistor in saturation

^{4.} JEDEC registered data and conditions

^{5.} CTR typ at 1.0mA = 40%

| | | | OUTPUT TRANSISTOR CHARACT. | | | DIO CHAR | STICS | COUPLED CHARACTERISTICS | | | | | | |
|----------------|---------------------------------|-----------|----------------------------------|-----------------------------------|-----------|----------------------------|--|-------------------------|----|------------|--|--|--|--|
| Package No. | Logic/ Connection Diagram | @IF mA | @IC mA | V _{CE} (sat) V Max | @IF mA | V _F V Max | t _r , t _f μs Τyp | fer Ratio @ VCE V | | Min Currer | | | | |
| Opto-37 | 024 | 50 | 2.6 | 0.7 | 10 | 1.5 | 4.0 | 10 | 10 | 10 | | | | |
| Opto-37 | 024 | 50 | 2.6 | 0.7 | 10 | 1.5 | 4.0 | 10 | 10 | 10 | | | | |
| Opto-37 | 024 | 50 | 1.6 | 0.7 | 10 | 1.5 | 4.0 | 10 | 10 | 10 | | | | |
| Opto-37 | 024 | 50 | 2.6 | 0.7 | 10 | 1.5 | 4.0 | 10 | 10 | 10 | | | | |
| Opto-37 | 024 | 50 | 2.6 | 0.7 | 10 | 1.5 | 4.0 | 10 | 10 | 10 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 2.5 | 0.4 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 2.5 | 10 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 2.5 | 10 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 2.5 | 10 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 2.5 | 10 | 10 | 20 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 3.0 | 10 | 10 | 50 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 3.0 | 10 | 10 | 50 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 3.0 | 10 | 10 | 50 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 3.0 | 10 | 10 | 50 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 3.0 | 10 | 10 | 50 | | | | |
| Opto-37 | 024 | 10 | 2.0 | 0.4 | 60 | 1.5 | 1.6 | 0.4 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 1.6 | 10 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 1.6 | 10 | 10 | 20 | | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 1.6 | 10 | 10 | 20 | | | | |

OPTO

COUPLERS—TRANSISTOR OUTPUT (Cont'd)

| | DEVICE NO. | OUTPUT AMSISTOR MARACT | MAX RATINGS @ T _A = 25°C | | | | | | | | |
|------|---------------------|------------------------------|-------------------------------------|----------------|------------------|-------------------------------|---------------------|--|--|--|--|
| Item | | P _D mW | Tran IC mA | v VCEO V | V _R V | Diode I _F mA | V _{ISO} kV | | | | |
| 1 | FCD830D (2) | 250 | 25 | 30 | 3.0 | 60 | 6.0 | | | | |
| 2 | FCD831 (2) | 250 | 25 | 30 | 3.0 | 60 | 1.5ac | | | | |
| 3 | FCD831A (2) | 250 | 25 | 30 | 3.0 | 60 | 1.5 | | | | |
| 4 | FCD831B (2) | 250 | 25 | 30 | 3.0 | 60 | 2.5 | | | | |
| 5 | FCD831C(2) | 250 | 25 | 30 | 3.0 | 60 | 5.0 | | | | |
| 6 | FCD831D(2) | 250 | 25 | 30 | 3.0 | 60 | 6.0 | | | | |
| 7 | FCD836 (2) | 250 | 25 | 20 | 3.0 | 60 | 1.5ac | | | | |
| 8 | FCD836C(2) | 250 | 25 | 20 | 3.0 | 60 | 5.0 | | | | |
| 9 | FCD836D (2) | 250 | 25 | 20 | 3.0 | 60 | 6.0 | | | | |
| 10 | 4N25 (4) | 250 | 1 G _ CA | 30 | 3.0 | 80 | 2.5 | | | | |
| 11 | 4N26 (4) | 250 | ×6 _ ×8 | 30 | 3.0 | 80 | 1.5 | | | | |
| 12 | 4N27 (4) | 250 | 8.0 <u> </u> | 30 | 3.0 | 80 | 96 1.5 | | | | |
| 13 | 4N28 ⁽⁴⁾ | 250 | 4.0 _ 00 | 30 | 3.0 | 80 | 0.5 | | | | |
| 14 | 4N35 ⁽⁴⁾ | 400 | a.C 69 | 30 | 6.0 | 60 | 3.5 | | | | |
| 15 | 4N36 (4) | 400 | 8.0 <u>- 1</u> 66 | 30 | 6.0 | 60 | 2.5 | | | | |
| 16 | 4N37 (4) | 400 | 4.0 _ 03 | 30 | 6.0 | 60 | 1.5 | | | | |
| 17 | IL1 | 200 | 10 - 0 | 30 | 3.0 | 150 | 2.5 | | | | |
| 18 | IL12 | 200 | A,0 _ 08 | 30 | 3.0 | 150 | 1.0 | | | | |
| 19 | IL15 | 200 | 10 _ 00 | 30 | 3.0 | 150 | 1.5 | | | | |

^{1.} Standard transistor output

^{2.} High speed transistor output guaranteed 2.0 μs max t_r and t_f with 100 Ω RL 8.0 μs typ at 1K Ω RL

^{3.} CTR guaranteed with transistor in saturation

^{4.} JEDEC registered data and conditions

^{5.} CTR typ at 1.0mA = 40%

| | | 3 | PUT SISTOI RACT. | TRANS | DE | DIO CHAR | STICS | COUPLED CHARACTERISTICS | | | | |
|----------------|---------------------------------|-----------|------------------------|-----------------------------------|-----------|----------------------|---|-------------------------|----|-----------|--|--|
| Package No. | Logic/ Connection Diagram | @IF mA | @IC mA | V _{CE} (sat) V Max | @IF mA | V _F V Max | t _{r,} t _f μs Typ | fer Ratio @VCE V | | Min Curre | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 1.6 | 10 | 10 | 20 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 60 | 1.5 | 1.6 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 60 | 1.5 | 1.6 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 60 | 1.5 | 1.6 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 60 | 1.5 | 1.6 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 60 | 1.5 | 1.6 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.7 | 20 | 1.5 | 1.6 | 10 | 10 | 6.0 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.7 | 20 | 1.5 | 1.6 | 10 | 10 | 6.0 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.7 | 20 | 1.5 | 1.6 | 10 | 10 | 6.0 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.5 | 10 | 10 | 20 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.5 | 10 | 10 | 20 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.5 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.5 | 10 | 10 | 10 | | |
| Opto-37 | 024 | 10 | 0.5 | 0.3 | 10 | 1.5 | 8.0 | 10 | 10 | 100 | | |
| Opto-37 | 024 | 10 | 0.5 | 0.3 | 10 | 1.5 | 8.0 | 10 | 10 | 100 | | |
| Opto-37 | 024 | 10 | 0.5 | 0.3 | 10 | 1.5 | 8.0 | 10 | 10 | 100 | | |
| Opto-37 | 024 | 16 | 1.6 | 0.5 | 60 | 1.5 | 2.0 | 10 | 10 | 20 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 10 | 1.5 | 2.0 | 5.0 | 10 | 10 | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 60 | 1.5 | 2.0 | 10 | 10 | 6.0 | | |

OPTO

COUPLERS—TRANSISTOR OUTPUT (Cont'd)

| | | TIPITU HOTELON TARACT | MAX RATINGS @ TA = 25°C | | | | | | | |
|------|---------------|-----------------------------|-------------------------|--------|------------------|------------------|---------------------|--|--|--|
| Item | DEVICE NO. | P _D mW | Tran IC mA | VCEO V | V _R V | iode IF mA | V _{ISO} kV | | | |
| 1 | IL16 | 200 | -1- | 30 | 3.0 | 150 | 1.5 | | | |
| 2 | IL74 | 150 | an - 1 n | 20 | 3.0 | 150 | 1.5 | | | |
| 3 | H11A1 | 250 | 100 | 30 | 3.0 | 60 | 2.5 | | | |
| 4 | H11A2 | 250 | 100 | 30 | 3.0 | 60 | 1.5 | | | |
| 5 | H11A3 | 250 | 100 | 30 | 3.0 | 60 | 2.5 | | | |
| 6 | H11A4 | 250 | 100 | 30 | 3.0 | 60 | 1.5 | | | |
| 7 | MCT2 | 250 | To - 10 | 30 | 3.0 | 60 | 1.5 | | | |
| 8 | MCT2E | 250 | 50 - 0 | 30 | 3.0 | 60 | 2.5 | | | |
| 9 | MCT26 | 250 | 10 - 10 | 30 | 3.0 | 60 | 1.5 | | | |
| 10 | TIL111(3) | 250 | 20 - 6 | 30 | 3.0 | 100 | 1.5 | | | |
| 11 | TIL112 | 250 | 80 - 10 | 20 | 3.0 | 100 | 1.5 | | | |
| 12 | TIL114 (3) | 250 | 10 - 0 | 30 | 3.0 | 100 | 2.5 | | | |
| 13 | TIL115 | 250 | 20 - 05 | 20 | 3.0 | 100 | 2.5 | | | |
| 14 | TIL116 | 250 | £8 - 6 | 30 | 3.0 | 100 | 2.5 | | | |
| 15 | TIL117 | 250 | 20 - 6 | 30 | 3.0 | 100 | 2.5 | | | |
| 16 | TIL118 | 250 | 80 - la | 20 | 3.0 | 100 | 1.5 | | | |
| 17 | MOC1000 | 250 | 80 - 8 | 30 | 3.0 | 80 | 1.5 | | | |
| 18 | MOC1001 | 250 | 6.0 - 0.5 | 30 | 3.0 | 80 | 2.5 | | | |
| 19 | MOC1002 | 250 | ao - los | 30 | 3.0 | 80 | 1.5 | | | |
| 20 | MOC1003 | 250 | _ | 30 | 3.0 | 80 | 0.5 | | | |

^{1.} Standard transistor output

^{2.} High speed transistor output guaranteed 2.0 μs max t_r and t_f with 100 Ω RL 8.0 μs typ at 1K Ω R_L 3. CTR guaranteed with transistor in saturation

^{4.} JEDEC registered data and conditions5. CTR typ at 1.0mA = 40%

4

FAIRCHILD OPTOELECTRONICS

| | anivac | R | PUT SISTORACT. | TRAN | DE | DIO CHAR | STICS | COUPLED CHARACTERISTICS | | | | | |
|----------------|---------------------------------|------------|-------------------|-----------------------------------|-----------|----------------------------|--|-------------------------|----|-----------|--|--|--|
| Package No. | Logic/ Connection Diagram | @ IF mA | @IC mA | V _{CE} (sat) V Max | @IF mA | V _F V Max | t _r , t _f μs Τyp | fer Ratio @VCE V | | Min Curre | | | |
| Opto-37 | 024 | 50 | 1.6 | 0.5 | 60 | 1.5 | 2.0 | 10 | 10 | 6.0 | | | |
| Opto-37 | 024 | 16 | 2.0 | 0.5 | - | - | 25.0 | 5.0 | 16 | 12.5 | | | |
| Opto-37 | 024 | 10 | 0.5 | 0.4 | 10 | 1.5 | 2.0 | 10 | 10 | 50 | | | |
| Opto-37 | 024 | 10 | 0.5 | 0.4 | 10 | 1.5 | 2.0 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 10 | 0.5 | 0.4 | 10 | 1.5 | 2.0 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 10 | 0.5 | 0.4 | 10 | 1.5 | 2.0 | 10 | 10 | 10 | | | |
| Opto-37 | 024 | 16 | 2.0 | 0.4 | 20 | 1.5 | 2.5 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 16 | 2.0 | 0.4 | 20 | 1.5 | 2.5 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 60 | 1.6 | 0.5 | 20 | 1.5 | 2.0 | 10 | 10 | 6.0 | | | |
| Opto-37 | 024 | 16 | 2.0 | 0.4 | 16 | 1.4 | 5.0 | 0.4 | 16 | 12 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 10 | 1.5 | 15.0 | 5.0 | 10 | 2.0 | | | |
| Opto-37 | 024 | 16 | 2.0 | 0.4 | 16 | 1.4 | 5.0 | 0.4 | 16 | 12 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 10 | 1.5 | 15.0 | 5.0 | 10 | 2.0 | | | |
| Opto-37 | 024 | 15 | 2.2 | 0.4 | 60 | 1.5 | 7.0 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 10 | 0.5 | 0.4 | 16 | 1.4 | 9.0 | 10 | 10 | 50 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 10 | 1.5 | 15.0 | 5.0 | 10 | 10 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.8 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.8 | 10 | 10 | 20 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.8 | 10 | 10 | 10 | | | |
| Opto-37 | 024 | 50 | 2.0 | 0.5 | 50 | 1.5 | 2.8 | 10 | 10 | 10 | | | |

OPTO

COUPLERS—DARLINGTON OUTPUT

| | | MAX RATINGS @ TA = 25°C | | | | | | | | |
|------|------------------------|-------------------------|-------------------|-----------|---------------------|----------|------------|--|--|--|
| | | าบคาม | Trar | nsistor | D | iode | | | | |
| Item | DEVICE NO. | P _D mW | I _C mA | VCEO V | V _R V | IF mA | VISO kV | | | |
| 1 | FCD850 | 250 | 125 | 30 | 3.0 | 80 | 1.5ac | | | |
| 2 | FCD850C | 250 | 125 | 30 | 3.0 | 80 | 5.0 | | | |
| 3 | FCD850D | 250 | 125 | 30 | 3.0 | 80 | 6.0 | | | |
| 4 | FCD855 | 250 | 125 | 55 | 3.0 | 80 | 1.5ac | | | |
| 5 | FCD855C | 250 | 125 | 55 | 3.0 | 80 | 5.0 | | | |
| 6 | FCD855D | 250 | 125 | 55 | 3.0 | 80 | 6.0 | | | |
| 7 | FCD860 (3) | 250 | 125 | 30 | 3.0 | 80 | 1.5ac | | | |
| 8 | FCD860C (3) | 250 | 125 | 30 | 3.0 | 80 | 5.0 | | | |
| 9 | FCD860D ⁽³⁾ | 250 | 125 | 30 | 3.0 | 80 | 6.0 | | | |
| 10 | FCD865 (3) | 250 | 125 | 30 | 3.0 | 80 | 1.5ac | | | |
| 11 | FCD865C(3) | 250 | 125 | 30 | 3.0 | 80 | 5.0 | | | |
| 12 | FCD865D (3) | 250 | 125 | 30 | 3.0 | 80 | 6.0 | | | |
| 13 | 4N29 (4) | 250 | 125 | 30 | 3.0 | 80 | 2.5 | | | |
| 14 | 4N30 ⁽⁴⁾ | 250 | 125 | 30 | 3.0 | 80 | 1.5 | | | |
| 15 | 4N31 ⁽⁴⁾ | 250 | 125 | 30 | 3.0 | 80 | 1.5 | | | |
| 16 | 4N32 ⁽⁴⁾ | 250 | 125 | 30 | 3.0 | 80 | 2.5 | | | |
| 17 | 4N33 ⁽⁴⁾ | 250 | 125 | 30 | 3.0 | 80 | 1.5 | | | |
| 18 | H11B1 | 250 | 100 | 25 | 3.0 | 60 | 2.5 | | | |
| 19 | H11B2 | 250 | 100 | 25 | 3.0 | 60 | 1.5 | | | |
| 20 | TIL113 (3) | 250 | 100 | 30 | 3.0 | 100 | 1.5 | | | |
| 21 | TIL119 | 250 | 1.00 | 30 | 3.0 | 100 | 1.5 | | | |
| 22 | MCA230 | 250 | | 30 | 3.0 | 60 | 1.5 | | | |
| 23 | MCA231 ⁽³⁾ | 250 | 50 | 30 | 3.0 | 60 | 1.5 | | | |
| 24 | MCA255 | 250 | | 55 | 3.0 | 60 | 1.5 | | | |

^{1.} Standard transistor output

^{2.} High speed transistor output guaranteed 2 μs max t_r and t_f with 100 Ω R_L 8 μs typ at 1K Ω R_L

^{3.} CTR guaranteed with transistor in saturation

^{4.} JEDEC registered data and conditions

^{5.} CTR typ at 1.0mA = 40%

| ivag . | | GTON | OUTF DARLIN CHAR | DDE RACT. | DIC | s | COUPLED CHARACTERISTICS | | | | | | |
|----------------|---------------------------------|-------|------------------------|--------------|----------------------------|-----------------------------|-----------------------------|------------------|-----|------------|--|--|--|
| Package No. | Logic/ Connection Diagram | @ VCE | ICEO μΑ Max | @IF mA | V _F V Max | t _f μs Typ | t _r μs Typ | er Ratio @VCE V | | Min Currer | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 15 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 15 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 15 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 15 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 15 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 15 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 80 | 1.0 | 1.0 | 200 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 80 | 1.0 | 1.0 | 200 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 80 | 1.0 | 1.0 | 200 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 80 | 1.0 | 0.5 | 400 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 80 | 1.0 | 0.5 | 400 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 150 | 80 | 1.0 | 0.5 | 400 | | | |
| Opto-37 | 024 | 10 | 0.1 | 50 | 1.5 | 45 | 10 | 10 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 50 | 1.5 | 45 | 10 | 10 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 50 | 1.5 | 45 | 10 | 10 | 10 | 50 | | | |
| Opto-37 | 024 | 10 | 0.1 | 50 | 1.5 | 120 | 10 | 10 | 10 | 500 | | | |
| Opto-37 | 024 | 10 | 0.1 | 50 | 1.5 | 120 | 10 | 10 | 10 | 500 | | | |
| Opto-37 | 024 | 10 | 0.1 | 10 | 1.5 | 100 | 125 | 5.0 | 1.0 | 500 | | | |
| Opto-37 | 024 | 10 | 0.1 | 10 | 1.5 | 100 | 125 | 5.0 | 1.0 | 200 | | | |
| Opto-37 | 024 | 10 | 0.1 | 10 | 1.5 | 50 | 50 | 1.0 | 10 | 300 | | | |
| Opto-37 | 024 | 10 | 0.1 | 10 | 1.5 | 50 | 50 | 2.0 | 10 | 300 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 35 | 5.0 | 5.0 | 10 | 100 | | | |
| Opto-37 | 024 | 10 | 0.1 | 10 | 1.5 | 35 | 5.0 | 1.0 | 5.0 | 200 | | | |
| Opto-37 | 024 | 10 | 0.1 | 20 | 1.5 | 35 | 5.0 | 5.0 | 10 | 100 | | | |

OPTO

PHOTO TRANSISTORS

| Item | DEVICE NO. | Description | | CEO = 1.0mA V Typ | ICE(It) VCE = 5.0V mA Min Typ Max | VCE(sat) H = 20mW/cm ² V Min Typ Max | t _r /t _f μs Typ | Package No. |
|------|---------------|---|----|--|---|---|---|----------------|
| 1 | FPT100 | Plastic, Dome Lens General Purpose | 30 | 50 | H = 5.0mW/cm ² 0.2 1.4 — | $I_C = 500 \mu A$ $- 0.16 0.3$ | 2.8 | Opto-26 |
| 2 | FPT100A | Plastic, Dome Lens 1:3 Sensitivity | 30 | 50 | H = 5.0mW/cm ² 1.0 1.4 3.0 | $I_{C} = 500 \mu A$ $- 0.16 0.3$ | 2.8 | Opto-26 |
| 3 | FPT100B | Plastic, Dome Lens 1:2 Sensitivity | 30 | 50 | H = 5.0mW/cm ² 1.3 1.4 2.6 | $I_C = 500 \mu A$ $- 0.16 0.3$ | 2.8 | Opto-26 |
| 4 | FPT101 | Miniature, .080" Dia. Hermetic Package | | = 0.1mA, 0.1µW/cm ² 60 | H = 20mW/cm ² 0.8 3.5 — | I _C = 0.4mA - 0.25 0.3 | 2.8 | Opto-27 |
| 5 | FPT102 | Photodiode Hermetic Package | | = 5.0μA, 0.1μW/cm ² 120 | $V_R = -10.0V,$ $H \le 0.1 \mu W/cm^2$ $- 0.1 nA 25 nA$ | V _R = -10V 12μΑ 20μΑ — | 0.2 | Opto-27 |
| 6 | FPT110 | Plastic Flat Lens General Purpose | 30 | 50 | H = 5.0mW/cm ² 0.2 0.88 — | $I_C = 500 \mu A$ $- 0.16 0.33$ | 2.8 | Opto-28 |
| 7 | FP110A | Plastic Flat Lens 1:3 Sensitivity | 30 | 50 | H = 5.0mW/cm ² 0.6 0.88 1.8 | $I_C = 500 \mu A$ $- 0.16 0.33$ | 2.8 | Opto-28 |
| 8 | FPT110B | Plastic Flat Lens 1:2 Sensitivity | 30 | 50 | H = 5.0mW/cm ² 0.8 0.88 1.6 | $I_{C} = 500 \mu A$ $- 0.16 0.33$ | 2.8 | Opto-28 |
| 9 | FPT120 | Plastic, Dome Lens High Sensitivity | 20 | 50 | H = 1.0mW/cm ² 0.4 1.5 — | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-26 |
| 10 | FPT120A | Plastic, Dome Lens 1:3 Sensitivity | 15 | 30 | H = 1.0mW/cm ² 1.5 2.4 4.5 | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-26 |
| 11 | FPT120B | Plastic, Dome Lens 1:1.5 Sensitivity | 15 | 30 | H = 1.0mW/cm ² 2.0 2.4 4.0 | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-26 |
| 12 | FPT120C | Plastic Cup, Dome Lens | 11 | 20 | $H = 5.0 \text{mW/cm}^2$ 16 — 25 | I _C = 1.0mA - 0.35 0.55 | 18 | Opto-26 |
| 13 | FPT130 | Plastic, Flat Lens High Sensitivity | 20 | 50 | H = 1.0mW/cm ² 0.4 0.9 — | I _C = 1.0mA - 0.25 0.55 | 18 | Opto-28 |
| 14 | FPT130A | Plastic, Flat Lens 1:3 Sensitivity | 15 | 30 | H = 1.0mW/cm ² 0.9 1.5 2.7 | I _C = 1.0mA - 0.25 0.55 | 18 | Opto-28 |
| 15 | FPT130B | Plastic, Flat Lens 1:2 Sensitivity | 15 | 30 | H = 1.0mW/cm ² 1.2 1.5 2.4 | I _C = 1.0mA - 0.25 0.55 | 18 | Opto-28 |
| 16 | FPT131 | Plastic, Dome Lens | 15 | 50 | H = 5.0mW/cm ² 0.1 1.4 — | $I_C = 500 \mu A$ $- 0.16 0.7$ | 2.8 | Opto-26 |
| 17 | FPT132 | Plastic, Dome Lens | 10 | 30 | H = 1.0mW/cm ² 0.2 1.5 — | I _C = 1.0mA — 0.15 0.7 | 18 | Opto-26 |
| 18 | FPT136 | Plastic, Flat Lens | 15 | 50 | H = 5.0mW/cm ² 0.1 0.88 — | $I_{C} = 500 \mu A$ $- 0.16 0.7$ | 2.8 | Opto-28 |

OPTO

PHOTO TRANSISTORS (Cont'd)

| Item | DEVICE NO. | Description | 1 | I.0mA | ICE(It) VCE = 5.0V mA Min Typ Max | VCE(sat) H = 20mW/cm ² V Min Typ Max | t _r /t _f μs Typ | Package No. |
|-------|---------------|--|----|-------|--|---|---|----------------|
| 08100 | FPT137 | Plastic, Flat Lens | 10 | 30 | H = 1.0mW/cm ² 0.2 0.9 — | I _C = 1.0mA - 0.15 0.7 | 18 | Opto-28 |
| 2 | FPT220 | Plastic, Dome Lens 1:2 Sensitivity | 20 | 50 | H = 1.0mW/cm ² 1.0 1.5 2.0 | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-26 |
| 3 | FPT230 | Plastic Flat Lens 1:2 Sensitivity | 20 | 50 | H = 1.0mW/cm ² 0.6 0.9 1.2 | I _C = 1.0mA - 0.25 0.55 | 18 | Opto-28 |
| 4 | FPT320 | Plastic, Dome Lens 1:3 Sensitivity | 20 | 50 | H = 1.0mW/cm ² 0.75 1.5 2.25 | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-26 |
| 5 | FPT330 | Plastic, Flat Lens 1:3 Sensitivity | 20 | 50 | H = 1.0mW/cm ² 0.45 0.9 1.35 | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-28 |
| 6 | FPT400 | Plastic, Dome Lens Photo Darlington | 30 | 50 | H = 1.0mW/cm ² 7.5 12 — | - 0.9 1.0 | 100 | Opto-26 |
| 7 | FPT410 | Plastic, Flat Lens Photo Darlington | 30 | 50 | H = 1.0mW/cm ² 5.0 8.0 — | - 0.9 1.0 | 100 | Opto-28 |
| 8 | FPT500 | TO-18, Dome Lens | 45 | 60 | H = 1.0mW/cm ² 1.0 — — | - 0.2 0.33 | 3.0 | Opto-29 |
| 9 | FPT500A | TO-18, Dome Lens 1:3 Sensitivity | 45 | 60 | H = 1.0mW/cm ² 2.0 — 6.0 | - 0.2 0.33 | 3.0 | Opto-29 |
| 10 | FPT510 | TO-18, Flat Lens | 45 | 60 | H = 5.0mW/cm ² 0.5 — — | - 0.2 0.33 | 3.0 | Opto-30 |
| 11 | FPT510A | TO-18, Flat Lens 1:3 Sensitivity | 45 | 60 | H = 5.0mW/cm ² 1.0 — 3.0 | - 0.2 0.33 | 3.0 | Opto-30 |
| 12 | FPT520 | TO-18, Dome Lens | 30 | 50 | H = 1.0mW/cm ² 5.0 — — | - 0.2 0.33 | 10 | Opto-29 |
| 13 | FPT520A | TO-18, Dome Lens 1:3 Sensitivity | 30 | 50 | H = 1.0mW/cm ² 6.0 — 18 | - 0.2 0.33 | 10 | Opto-29 |
| 14 | FPT530 | TO-18, Flat Lens | 30 | 50 | H = 5.0mW/cm ² 3.0 — — | - 0.2 0.33 | 10 | Opto-30 |
| 15 | FPT530A | TO-18, Flat Lens 1:3 Sensitivity | 30 | 50 | H = 5.0mW/cm ² 4.0 — 12 | - 0.2 0.33 | 10 | Opto-30 |
| 16 | FPT540 | TO-18, Dome Lens | 12 | 20 | H = 1.0mW/cm ² 8.0 — — | - 0.35 0.55 | 18 | Opto-29 |
| 17 | FPT540A | TO-18, Dome Lens 1:3 Sensitivity | 12 | 20 | H = 1.0mW/cm ² 10 — 30 | - 0.35 0.55 | 18 | Opto-29 |
| 18 | FPT550 | TO-18, Flat Lens | 12 | 20 | H = 5.0mW/cm ² 8.0 — — | - 0.35 0.55 | 18 | Opto-30 |

ENIDCHII D ODTOEI ECTDONICE

PHOTO TRANSISTORS (Cont'd)

| Item | DEVICE NO. | Description | V _{CEO} I _C = 1.0mA V Min Typ | | ICE(It) VCE = 5.0V mA Min Typ Max | VCE(sat) H = 20mW/cm ² V Min Typ Max | t _r /t _f μs Τyp | Package No. |
|------|---------------|--------------------------------------|--|----|--|---|---------------------------------------|----------------|
| 1. | FPT550A | TO-18, Flat Lens 1:3 Sensitivity | 12 | 20 | H = 5.0mW/cm ² 8.0 — 24 | - 0.35 0.55 | 18 | Opto-30 |
| 2 | FPT560 | TO-18, Dome Lens Photo Darlington | 30 | 50 | H = 0.5mW/cm ² 10 15 — | - 0.9 1.0 | 100 | Opto-29 |
| 3 | FPT570 | TO-18, Flat Lens Photo Darlington | 30 | 50 | H = 0.5mW/cm ² 1.0 6.0 — | - 0.9 1.0 | 100 | Opto-30 |
| 4 | FPT610 | Miniature, .085" x .150" | 30 | 50 | H = 5.0mW/cm ² 0.2 1.4 — | $I_C = 500 \mu A$ - 0.16 0.3 | 2.8 | Opto-31 |
| 5 | FPT630 | X .095" Tall Flat Lens | 20 | 50 | H = 1.0mW/cm ² 0.4 0.9 — | I _C = 1.0mA — 0.25 0.55 | 18 | Opto-31 |

INFRARED EMITTERS

| | G (60) | 0.1 80 - 3 | 0.8 | V _F | Wave Length @ Peak | Axial Intensity | man X |
|------|--------|--|----------|-----------------|-----------------------|---------------------|---------|
| | DEVICE | 80.0 80 - 1 | IF mA | IF = 100mA V | Emission | IF = 100mA mW/sr | Package |
| Item | NO. | Description | Max | Тур | Тур | Тур | No. |
| 6 | FPE100 | Metal Header Package Wide Beam | 100 | 1.35 | 890 | 0.3 | Opto-32 |
| 7 | FPE104 | Lead Frame Package Narrow Beam | 100 | 1.35 | 890 | 10 | Opto-8 |
| 8 | FPE106 | Miniature .085" x .150" x .095" Tall Flat Lens | 100 | 1.35 | 890 | 0.4 | Opto-31 |
| 9 | FPE500 | TO-18, Dome Lens | 250 | 1.35 | 890 | 10.0 | Opto-29 |
| 10 | FPE510 | TO-18, Flat Lens | 250 | 1.35 | 890 | 1.0 | Opto-30 |
| 11 | FPE520 | TO-18, Dome Lens | 250 | 1.35 | 940 | 50 | Opto-29 |
| 12 | FPE530 | TO-18, Flat Lens | 250 | 1.35 | 940 | 5.0 | Opto-30 |

OPTO

SOURCE/SENSOR ARRAYS

| Item | DEVICE NO. | Description | I _F mA/cell Max | V _F V _F V Typ | ICE(It) H = 1.0mW | VCE(sat) V/cm ² (GaAs) ICE = 4.0mA V | 10UT 10UT 1 _F = 50mA, | g Factor ((Min) ((Max) VCE = 5.0V e = 0.05" Typ | Package No. |
|------|---------------|--|----------------------------|-------------------------------------|----------------------|--|--|---|---------------------|
| 1 | FPA100 | 9-Element Source/ Sensor Array 0.100" Centers | 75 | 1.25 | 4.5 | 0.4 | 0.5 | 0.65 | Opto-33 (2 pcs.) |
| 2 | FPA101 | 12-Element Source/ Sensor Array 0.250" Centers | 75 | 1.25 | 4.5 | 0.4 | 0.5 | 0.65 | Opto-34 (2 pcs.) |
| 3 | FPA102 | 10-Element Source/ Sensor Array 0.087" Centers | 75 | 1.25 | 4.5 | 0.4 | 0.5 | 0.65 | Opto-35 (2 pcs.) |

SENSOR ARRAYS

| Item | DEVICE NO. | Description | I _{CE} mA Max | V _{CEO} I _C =1.0mA V Typ | ICE(It) H=10mW/cm ² Tung.@ 2854°K mA Typ | VCE(sat) H=20mW/cm ² I _C = 500mA V Typ | 10UT 10UT I _F = 50mA, | g Factor ((Min) ((Max) VCE = 5.0V e = 0.05" Typ | Package No. |
|------|---------------|--|------------------------|---|---|--|--|---|----------------|
| 4 | FPA700 | 9-Element Sensor Array 0.100" Centers | 25 | 20 | 1.75 | 0.16 | 0.5 | 0.65 | Opto-33 |
| 5 | FPA700A | 9-Element Sensor Array 0.100" Centers | 25 | 20 | 1.75 | 0.16 | 0.75 | 0.85 | Opto-33 |
| 6 | FPA710 | 12-Element Sensor Array 0.250" Centers | 25 | 20 | 1.75 | 0.16 | 0.5 | 0.65 | Opto-34 |
| 7 | FPA710A | 12-Element Sensor Array 0.250" Centers | 25 | 20 | 1.75 | 0.16 | 0.75 | 0.85 | Opto-34 |
| 8 | FPA720 | 10-Element Sensor Array 0.087" Centers | 25 | 20 | 1.75 | 0.16 | 0.5 | 0.65 | Opto-35 |
| 9 | FPA720A | 10-Element Sensor Array 0.87" Centers | 25 | 20 | 1.75 | 0.16 | 0.75 | 0.85 | Opto-35 |

OPTO

REFLECTIVE SENSORS

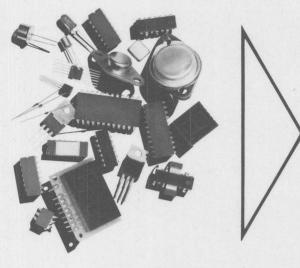
| Item | DEVICE NO. ⁽¹⁾ | Description | Diode V _F I _F I _F I _F = 20mA mA V Max Typ | | Photo- Transistor VCEO ICE = 1.0mA V Min | Combined IOUT IF = 50mA, V_{CE} = 5V distance = .40" μA Min Max | | Package No. |
|------|------------------------------|--------------------------------|--|------|---|--|-------|----------------|
| 1 | FPA103/106 | Light Reflective Transducer | 75 | 1.25 | 12 | 20 | -001A | Opto-36 |
| 2 | FPA104/107 | Light Reflective Transducer | 75 | 1.25 | 12 | 60 | 180 | Opto-36 |
| 3 | FPA105/108 | Light Reflective Transducer | 75 | 1.25 | 12 | 80 | 160 | Opto-36 |

DICE

| Item | DEVICE NO. | Die Size Inches | Description AVAGGA SIDEMS | | | | |
|------------------|--|--|--|--|--|--|--|
| 4 | FLX2121 | .015 x .015 | A high-efficiency, long life red GaAsP LED. Typical luminous intensity = 0.7 mcd @ $V_F = 1.7 \text{ V}$ and $I_F = 20 \text{ mA}$. | | | | |
| 5 6 7 8 | FNX8019 FNX8009 FNX8039 FNX8041 | .116 x .070 .100 x .062 .080 x .049 .040 x .026 | GaAsP monolithic 7/9 segment display with a 5° slant. Dimensions given are digit sizes—die is larger by .008" vertical and no more than .016" in horizontal direction. Half digits (numeral-one) are available for the 0.100", and 0.116" display. The FNX8019, 8009 and 8039 are 9-segment and can be used as 7-segment. The other is 7-segment only. | | | | |
| 9 | FNX8209 | .050 x .063 | A current-sinking digit driver for common-cathode LED displays. The monolithic chip contains four independent npn transistors, each capable of sinking 63 mA with $I_B=1.0$ mA. | | | | |
| 10 | FPX1010 | .040 x .040 | An npn Planar $^{(2)}$ phototransistor, h _{FE} = 100 Min; V _{CEO} = 30 V Min; V _{CBO} = 50 V Min; l _{CE(It)} = 0.3 mA Min @ H = 5.0 mW/cm ² (tungsten @ 2854° K); typical t _r and t _f = 3.0 μ s @ l _{CE} = 4.0 mA and R _L = 100 Ω ; V _{CE(sat)} = 0.4 V Max @ l _C = 500 μ A. | | | | |
| 11 NE-plac | FPX1011 | .040 x .040 | An npn Planar phototransistor with high illumination sensitivity h _{FE} = 500 Min; V _{CEO} = 12 V Min; V _{CBO} = 30 V Min; I _{CE(It)} = 0.3 mA Min @ H = 1.0 mW/cm² (tungsten @ 2854° K), typical t _r and t _f = 18 μ s@I _{CE} = 4.0 mAand R _L = 100 Ω ; V _{CE(sat)} = 0.5 VMax @ I _C =500 μ A | | | | |

^{1.} FPA 106, 107, 108 have infrared filters.

^{2.} Planar is a patented Fairchild process.



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| | DIODES TRANSISTORS OPTOELECTRONICS CHARGE-COUPLED DEVICES HYBRIDS LINEAR INTERFACE DIGITAL MEMORIES MICROCOMPUTERS AEROSPACE AND DEFENSE LOGIC/CONNECTION DIAGRAMS ORDERING INFORMATION AND PACKAGE OUTLINES FAIRCHILD FIELD SALES OFFICES, |



FAIRCHILD CHARGE-COUPLED DEVICES

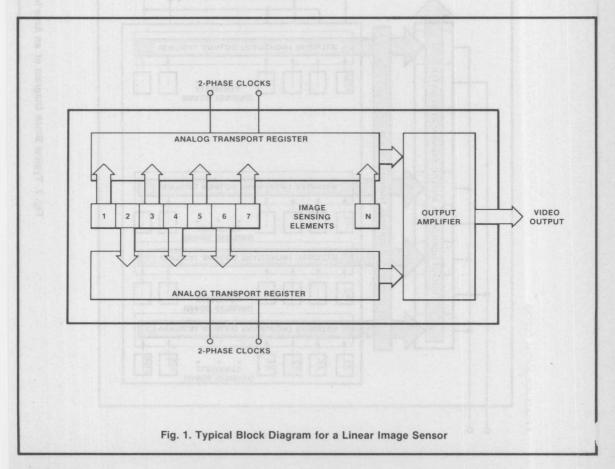
CCD

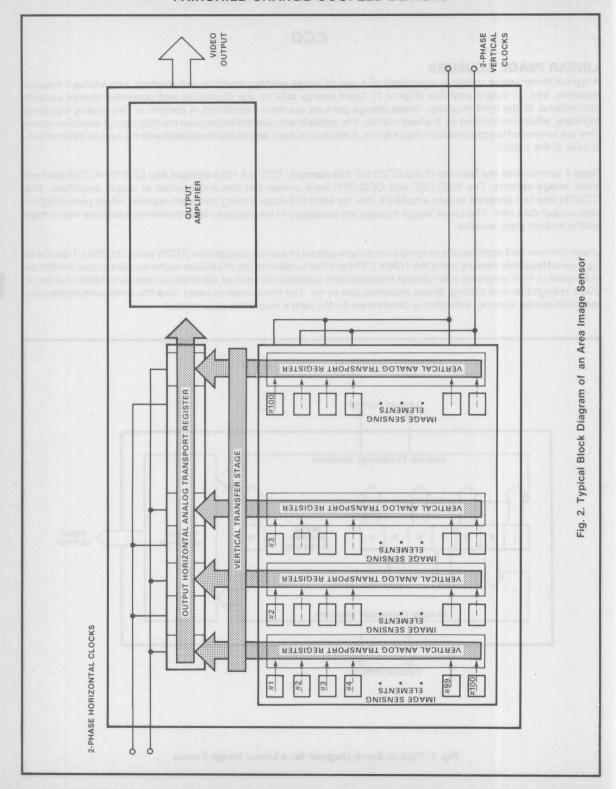
LINEAR IMAGE SENSORS

A typical linear image sensor is composed of a row of image sensing elements (photosites), two analog transport registers, and an output amplifier (*Figure 1*). Light energy falls on the photosites and generates charge packets proportional to the light intensity. These charge packets are then transferred in parallel to two analog transport registers, which are clocked by 2-phase clocks. The packets are next delivered to an on-chip output amplifier where they are converted to proportional voltage levels. A series of pulses, amplitude modulated with the optical information, appear at the output.

Table 1 summarizes the features of the CCD110F 256-element, CCD131 1024-element and CCD121H 1728-element linear image sensors. The CCD110F and CCD121H have similar cell size and number of output amplifiers. The CCD131 has two separate output amplifiers, one for each 512-stage analog transport register, which permit higher total output data rate. The linear image sensors are packaged in hermetically sealed ceramic packages with a high quality optical glass window.

Linear sensors find applications ranging from simple optical character recognition (OCR) using the 256 x 1 device to high speed facsimile sensing using the 1728 x 1. The precise location of the photosites on the sensors allows the device to be used in high precision non-contact measurement applications such as dimensional measurements of objects, shape recognition and sorting, defect detection and so on. The three linear sensors have the same sensing element center-to-center spacing; selection is determined by the user's resolution requirement.





FAIRCHILD CHARGE-COUPLED DEVICES

| PARAMETERS | CCD110F | CCD131 | CCD121H |
|-----------------------------|------------------------|------------------------|------------------------|
| Number of Elements | 256 | 1024 | 1728 |
| Dynamic Range | 500:1 | 500:1 | 500:1 |
| Number of Output Amplifiers | 1 | 2 | 1 |
| Package Type | Non-Hermetic | Hermetic | Hermetic |
| Number of Pins | 18 | 24 | 24 |
| Saturation Exposure | 1.0 µJ/cm ² | 1.0 μJ/cm ² | 1.0 μJ/cm ² |
| Saturation Output Voltage | 150 mV | 750 mV | 750 mV |
| Photo Element Dimensions | 13 μ Χ 17 μ | 13 μ Χ 13 μ | 13 μ Χ 17 μ |
| Video Data Rate | 10 MHz | 24 MHz | 10 MHz |
| Design Development Board | CCD110FB | CCD131DB | CCD121HB |

Table 1. Linear Image Sensors

| PARAMETERS | CCD202 | CCD211 |
|---------------------------|------------------------|------------------------|
| Number of Elements | 100 X 100 | 244 X 190 |
| Dynamic Range | 300:1 | 300:1 |
| Package Type | Hermetic | Hermetic |
| Number of Pins | 24 | 24 |
| Saturation Exposure | 0.4 µJ/cm ² | 0.2 µJ/cm ² |
| Saturation Output Voltage | 1,600 mV | 200 mV |
| Photoelements Dimensions | 18 μm X 30 μm | 14 μm X 18 μm |
| Video Data Rate | 2 MHz | 7 MHz |
| Design Development Boards | CCD202DB | |
| | | |

Table 2. Area Image Sensors

AREA IMAGE SENSORS

Area arrays are similar to the linear sensors except that the photosites are arranged in a matrix format and the opaque transport registers are located between the photosite columns (Figure 2). The charge packets are transferred to the output amplifier in two separate fields, line by line. This technique is called the interline transfer approach.

Table 2 summarizes the features of the CCD202 100 x 100 element and CCD211 244 x 190 element devices. The x-y format of the area sensors was selected to provide a 4 x 3 image aspect ratio. The highly precise location of the photosites allows precise identification of each component of the image signal, an important feature for applications requiring exact dimensional measurements. The devices are also well suited for use in video cameras that require low power, small size, high sensitivity and high reliability. Both devices are packaged in a hermetically sealed package with a high quality optical glass window.

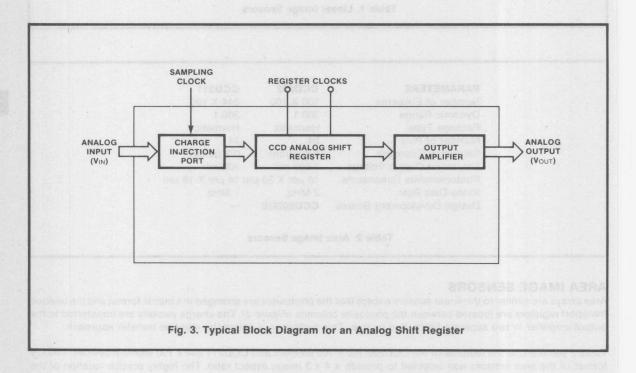
ANALOG SHIFT REGISTERS

The capability to manipulate information in the form of charge packets makes CCD technology ideal for analog signal processing. In a CCD analog shift register, electrical inputs are applied to the charge-injection port which samples the input signal at a rate determined by the input signal bandwidth.

This signal is then transformed into a charge packet and injected into the register. The clocks shift the charge packet through the register to the output amplifier for conversion to an output signal voltage. A filtering or sample-and-hold technique is usually required to recover the analog information. The time delay between the input and output signals is equal to the number of elements in the CCD register (N) divided by the clock rate frequency. Since N is fixed, varying the clock rate provides a variable delay that makes the CCD shift register a powerful device for applications requiring highly precise delay of analog information.

and drop-out compensators for videotape recorders. Other types of applications include time-base compression and expansion systems where data can be fed to the device at one speed and fed out of the device at a different speed. Preprocessing the analog data through a CCD321A eliminates the need for expensive high speed A-to-D converters in these applications. Finally, the device can also be used in audio systems for echo-effect simulations, reverberation systems, etc.

The CCD321A comes in four different classes—the CCD321A-1 for high quality video applications, the CCD321A-2 for medium quality video applications, the CCD321A-3 for general purpose time-base compression and expansion applications and the CCD321A-4 for audio applications.



| PARAMETERS | CCD311 | CCD321A |
|----------------------------------|--------------------|-----------------------|
| Number of Elements | 130 or 260 | 455 or 910 (Dual 455) |
| Number of Charge Injection Ports | 2 | 2 |
| Number of Outputs | 1 | 2 |
| Range of Clock Rates | 20 KHz - 10 MHz | 20 KHz - 40 MHz |
| Number of Pins | 18 | 16 |
| Signal to Noise Ratio | 50 db | 58 db |
| Video Signal Bandwidth | 4.2 MHz | 5.0 MHz |
| Differential Gain | 3% | 1% to 3% |
| Differential Phase | 3° | 1° to 3° |
| Total Harmonic Distortion | 3% | <1% |
| Table 3. Analo | og Shift Registers | |

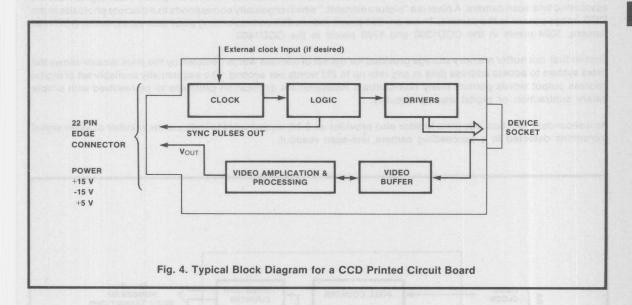
FAIRCHILD CHARGE-COUPLED DEVICES

DESIGN DEVELOPMENT BOARDS AND MODULES

Fairchild offers a series of printed circuit boards for use as construction aids for experimental systems using CCD linear and area image sensors. These design development boards are fully assembled and tested, and require only power supplies and an oscilloscope to display the video information corresponding to the image positioned in front of the sensor. A typical board (*Figure 4*) includes an on-board variable-frequency clock generator that can be overrun by an external input, logic circuitry for timing drive signals, drivers to interface the TTL logic to CCD levels, a socket for mounting the device at 90° on the edge of the board, video buffer circuits and simple video processing electronics. Design development boards are available for the CCD110F, CCD131, CCD121H and the CCD202.

To operate the board, supply +5 V, +15 V and -15 V through a 22-pin standard edge connector to the pc board. Video information, typically 1.0 V peak-to-peak, as well as synchronization pulses are supplied to the connector for display on an oscilloscope. The CCD202 board also includes sweep waveform generators for driving an x-y monitor.

In addition, Fairchild offers the CCD321VM video delay module which includes the CCD321A-2 analog shift register plus driver electronics package with VCO, drivers, device socket, video amplifiers and filters. A 1.0 V peak-to-peak input comes out 1.0 V peak-to-peak, delayed by 455 or 910 divided by the clock frequency. The CCD321VM module is capable of storing a full video line (1H) at a 14.3 MHz clock rate with a 58 dB signal-to-noise ratio and excellent linearity. Assembled and thoroughly tested, the module requires only a single power supply. Also available is the CCD321AM audio module which includes the CCD321A-4 plus driver package and processing electronics.



LINE-SCAN CAMERA SUBSYSTEMS

There are presently three models of the line-scan camera sub-systems—the 256-element CCD1100, the 1024-element CCD1300 and the 1728-element CCD1400. The choice among them is determined primarily by resolution requirements, since each camera model offers essentially equivalent performance in other respects. The line-scan camera can be ordered with a C-mount lens with a focal length to meet the specific application.

Each camera subsystem includes a line-scan camera, a camera-control unit and interconnecting cables. Within the camera is a CCD image sensor, a logic board to provide clock signals for controlling sensor operation, and a video processing assembly to generate an analog-video and a binary-video output signal. The analog-video signal is a continuous analog representation of the spacial distribution of image brightness, obtained by sample-and-hold processing of the raw sensor output. The binary-video output, provided by a comparator, is a digital version of the analog video waveform and corresponds to black-to-white and white-to-black transitions of the analog-video signal across the threshold. The threshold adjustment can be varied across the full dynamic range of the camera.

FAIRCHILD CHARGE-COUPLED DEVICES

The camera-control unit provides the power supply voltages and interface connections for the subsystem input and output signals. It also contains the adjustment controls for camera exposure time, video data rate, the threshold voltage for the binary-video comparator, and an AGC off-on switch. The camera-to-control interconnection cable permits complete remote control of the camera by the control unit. Emulation of the control unit signals permits camera control by microcomputer.

CCD line-scan camera subsystems are being used for non-contact measurement, inspection, defect detection, shape and pattern recognition, color sorting, and for a wide variety of quality process-control industrial applications.

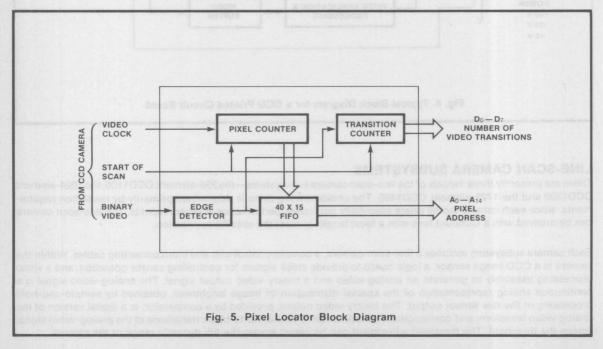
PIXEL LOCATOR

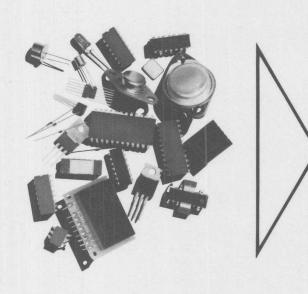
The pixel locator is an optional accessory for use with any of the Fairchild standard product line-scan camera subsystems; the 256-element CCD1100, the 1024-element CCD1300 or the 1728-element CCD1400. It is a single printed circuit board which is installed in a 3" x 6" x 10" enclosure designed as a companion to the line-scan camera control unit. All required bias-voltage and camera-signal input connections are made by a single 15-wire cable which is provided for interconnection between the pixel locator and control unit. A mating 50-pin connector is provided to allow user construction of a cable for accessing of the pixel locator I/O ports.

The primary electrical function of the pixel locator is generation of a set of digit output data words which indicate the pixel address locations where white-to-black and black-to-white transitions occur in the binary video signal from the associated line-scan camera. A pixel is a "picture element," which physically corresponds to a discrete photosite in the CCD image sensor in the camera. There are 256 pixels (hence 256 corresponding pixel addresses) in the CCD1100 camera, 1024 pixels in the CCD1300 and 1728 pixels in the CCD1400.

First-in first-out buffer memory storage provided for the set of address words detected by the pixel locator allows the users system to access address data at any rate up to 2M words per second. The sequentially available set of digital address output words permits many non-contract measurement application problems to be resolved with simple binary subtraction or digital display circuitry.

As a secondary function, the pixel locator also provides an 8-bit output word to indicate the number of video signal transitions detected in a proceeding camera line-scan readout.





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FAIRCHILD HYBRIDS

INTERFACE

HIGH CURRENT DRIVERS

| Item | DEVICE NO. | Description | Function | Input Compatibility | Output Current A (Max) | Output Standoff Voltage-V | Drivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------|-------------------------------|-------------------|---------------------|---------------------------|------------------------------|---------------------|-----------------------------|------------|
| 1 | SH2001 | High Voltage, High Current | NAND | DTL,TTL | 1.0 | 50 | 1 | H5 | TO-100 |
| 2 | SH2002 | High Voltage, High Current | NAND | DTL,TTL | 1.0 | 40 | 1 | H5 | TO-100 |
| 3 | SH2200 | High Voltage, High Current | NAND | DTL,TTL | 2.0 | 50 | 1 | H5 | TO-100 |
| 4 | SH2201 | High Voltage, High Current | NAND | DTL,TTL | 2.0 | 100 | 1 | H5 | TO-100 |
| 5 | SH3011* | Dual Hammer | Non- Inverting | TTL | 5.0 | 80 | 2 | Н8 | 8-pin TO-3 |

ANALOG SWITCHES

| Item | DEVICE NO. | Description | Input Logic | Channel Resistance Ω (Max) | Supply Voltage V | Logic/Connection Diagram | Package(s) |
|------|------------|--------------------|-------------|----------------------------------|---------------------|--------------------------|------------|
| 6 | SH3002 | SPDT Analog Switch | TTL | 200 | ±12 | H6 | TO-100 |
| 7 | SH3003 | DPST Analog Switch | TTL | 200 | ±12 | H7 | TO-100 |

CONSUMER

RADIO-AUDIO/TV CIRCUITS

| Item | DEVICE NO. | Description | Logic/Connection Diagram | Package(s) |
|------|------------|--------------------------------------|-----------------------------|----------------------|
| 4 | SH1549 | Memory Control Hybrid | H4 | 1"x2" Single In-line |
| 5 | SH1552 | Ladder Network for Signal Conversion | НЗ | 1"x2" Single In-line |
| 6 | SH3006* | Wideband Amplifier/Prescaler | | |

^{*}To be announced

FAIRCHILD HYBRIDS

VOLTAGE REGULATORS

VOLTAGE REGULATORS

| Item | DEVICE NO. | Description | Input Voltage Range-V | Output Voltage Range-V | Output Current A (Max) | Output Current Peak A (Typ) |
|------|------------------|---------------------|-----------------------------|------------------------------|------------------------------|--------------------------------------|
| 1 | SH123 | 3 Term. Pos. VR | 7.5 to 25 | 5.0 | 3.0 | 8.0 |
| 2 | SH223 | 3 Term. Pos. VR | 7.5 to 25 | 5.0 | 3.0 | 8.0 |
| 3 | SH323 | 3 Term. Pos. VR | 7.5 to 25 | 5.0 | 3.0 | 8.0 |
| 4 | μ Α78H05 | 3 Term. Pos. VR | 7.5 to 25 | 5.0 | 5.0 | 8.0 |
| 5 | μ Α78H05A | 3 Term. Pos. VR | 7.0 to 40 | 5.0 | 5.0 | 8.0 |
| 6 | μ Α78Ρ05 | 3 Term. Pos. VR | 7.0 to 40 | 5.0 | 10 | 12 |
| 7 | μ Α78H12 | 3 Term. Pos. VR | 15.5 to 25 | OM/ 12 | 5.0 | 8.0 |
| 8 | μ Α78H15 | 3 Term. Pos. VR | 18.5 to 25 | 15 | 5.0 | 8.0 |
| 9 | SH1605* | Switching Regulator | 5.0 to 40 | 2.0 to 20 | 5.0 | 10 |
| 10 | μ Α78HG | 4 Term. Pos. VR | 7.5 to 40 | 5.0 to 24 | 5.0 | 8.0 |
| 11 | μ Α79HG | 4 Term. Neg. VR | 7.0 to -40 | -2.2 to -24 | 5.0 | 8.0 |

AMPLIFIERS

OPERATIONAL AMPLIFIER

| tem | DEVICE NO. | Description | Input Offset Voltage mV | Input Offset Voltage Drift μV/°C | Input Offset Current nA |
|-----|------------|--------------------------------|-------------------------------|--|-------------------------------|
| 12 | SH2714 | Dual Instrumentation Amplifier | 0.5 | 0.7 | 2.8 |

SERVO AMPLIFIER

| Item | DEVICE NO. | Description | Input Offset Voltage mV | Input Offset Voltage Drift μV/°C | Input Offset Current-nA |
|------|------------|-----------------|-------------------------------|--|----------------------------|
| 13 | SH3015* | Servo Amplifier | 6.0 | _ | 200 |

CURRENT AMPLIFIER

| Item | DEVICE NO. | Function | Voltage Gain (Typ) | AC Current Gain-A/mA | Input Impedance Κ Ω (Typ) |
|------|------------|-------------------|-----------------------|-------------------------|------------------------------|
| 14 | SH0002 | Current Amplifier | 0.97 | 40 | 400 |

^{*}To be announced

FAIRCHILD HYBRIDS

| Line Regu- | Quiescient Current mA | Ripple Rejection dB | Dropout Voltage V | Logic/ Connection Diagram | Package(s) |
|----------------|-----------------------------|---------------------------|-------------------------|---------------------------------|------------|
| 8 A 4 1 | 10 | 60 | 2.5 | H12 | TO-3 |
| 8.8 040 | 10 | 60 | 2.5 | H12 | TO-3 |
| B.A. alipon | 10 | 60 | 2.5 | H12 | TO-3 |
| B.A. oliquolit | 10 | 60 | 2.5 | H12 | TO-3 |
| O steps of | 10 | 60 | 1.75 | H12 | TO-3 |
| 0.001 | 10 | 60 | 2.0 | H12 | TO-3 |
| 1 | 10 | 60 | 3.5 | H9 | TO-3 |
| 1 | 10 | 60 | 3.5 | H9 | TO-3 |
| | 30 | | _ | | |
| 1 | 10 | 60 | 2.5 | H10 | 4-pin TO-3 |
| 1 | 5 | 50 | 3.5 | H11 | 4-pin TO-3 |

| Input Bias Current nA | Common Mode Range V | Diff. Input Voltage V | Voltage Gain V/V | Bandwidth A _V = MHz | Output Current A | The state of the s | Package(s) |
|-----------------------------|---------------------------|-----------------------------|---------------------|-----------------------------------|------------------------|--|------------|
| 3.0 | ±30 | 0.3 | 20K | 1.0 | _ | H2 | TO-116 |

| Input Bias Current nA | Common Mode Range V | Diff. Input Voltage V | Voltage Gain V/V | Bandwidth Ay = MHz | Output Current A | Logic/ Connection Diagram | Package(s |
|-----------------------------|---------------------------|-----------------------------|---------------------|-----------------------|------------------------|---------------------------------|-----------|
| 500 | ±12 | | _ | | 6.0 | _ | |

| Output Impedance Ω (Typ) | Output Voltage Swing (Typ) | DC Offset Voltage mV (Typ) | Bandwidth MHz (Typ) | Logic/ Connection Diagram | Package(s) |
|--------------------------|-------------------------------|----------------------------------|------------------------|---------------------------------|------------|
| 6.0 | ±11 | 30 | 50 | H1 | TO-99 |

IGNITION MODULES

| Item | DEVICE NO. | Description | Input Capability | Output Current A | Package(s) | |
|------|------------|-----------------|--------------------------|---------------------|------------|--|
| 1 | SH4240 | Ignition Module | Magnetic Pickup | 2.0 to 7.0 | Module A,B | |
| 2 | SH4241 | Ignition Module | Magnetic Pickup | 2.0 to 7.0 | Module A,B | |
| 3 | SH4242 | Ignition Module | Logic | 2.0 to 7.0 | Module A,B | |
| 4 | SH4243 | Ignition Module | Logic | 2.0 to 7.0 . | Module A,B | |
| 5 | SH4244 | Ignition Module | Opto, Logic, Hall Effect | 2.0 to 7.0 | Module C | |
| 6 | SH4245 | Ignition Module | Opto, Logic, Hall Effect | 2.0 to 7.0 | Module C | |



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SOATHET RE

VOLTAGE REGULATORS

VOLTAGE REGULATORS (BY OUTPUT CURRENT)

| Item | DEVICE NO. | Output Voltage V (Typ) | Temperature * | Line Regulation mV (Max) | Load Regulation mV (Max) | Ripple Rejection dB (Min) | Quiescent Current mA | Input Voltage Range V | Dropout Voltage V (Typ) | Logic/Connection Diagram(s) | Package(s) |
|------|------------------|---------------------------|---------------|-----------------------------|-----------------------------|------------------------------|-------------------------|--------------------------|----------------------------|--------------------------------|------------------------|
| Fixe | d Positive 1 | 00 mA | | | | | | | | rine S. Ami | De wither 4 bearing 50 |
| 1 | μ A78L26 | 2.6 | C, V | 100 | 50 | 43 | 5.5 | 4.8 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 2 | μ A78L05 | 5.0 | C, V | 150 | 60 | 41 | 5.5 | 7.2 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 3 | μ A78L62 | 6.2 | C, V | 175 | 80 | 40 | 5.5 | 8.4 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 4 | μ A78L82 | 8.2 | C, V | 175 | 80 | 39 | 5.5 | 10.4 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 5 | μ Α78L09 | 9.0 | C, V | 188 | 90 | 38 | 5.5 | 11.2 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 6 | μ A78 L12 | 12 | C, V | 250 | 100 | 37 | 6.0 | 14.2 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 7 | μ A78L15 | 15 | C, V | 300 | 150 | 34 | 6.0 | 17.2 to 35 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 8 | μ A78L18 | 18 | C, V | 300 | 170 | 33 | 6.0 | 20.2 to 40 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| 9 | μ A78L24 | 24 | C, V | 300 | 200 | 31 | 6.0 | 26.2 to 40 | 2.2 | L-VR1,2 | TO-39,TO-92 |
| Fixe | d Positive 5 | 00 mA | | | (d) (d) | | 1 00 | 1.84 086 | OOF } | 9 1 18 | 490 IA 101 |
| 10 | μ Α78Μ05 | 5.0 | М | 50 | 50 | 62 | 6.0 | 8.0 to 35 | 2.5 | L-VR2 | TO-39 |
| 11 | μ Α78Μ05 | 5.0 | С | 100 | 100 | 62 | 6.0 | 7.5 to 35 | 2.5 | L-VR2,6 | TO-39,TO-220 |
| 12 | μ Α78C05 | 5.0 | М | 100 | 50 | 62 | 6.0 | 8.0 to 35 | 3.0 | L-VR6 | TO-220 |
| 13 | μ Α78Μ06 | 6.0 | М | 60 | 60 | 59 | 6.0 | 9.0 to 35 | 2.5 | L-VR2 | TO-39 |
| 14 | μ Α78Μ06 | 6.0 | С | 100 | 120 | 59 | 6.0 | 8.5 to 35 | 2.5 | L-VR2,6 | TO-39,TO-220 |
| 15 | μ Α78C06 | 6.0 | C, V | 100 | 60 | 59 | 6.0 | 9.0 to 35 | 3.0 | L-VR6 | TO-220 |
| 16 | μ Α78Μ08 | 8.0 | М | 60 | 80 | 56 | 6.0 | 11 to 35 | 2.5 | L-VR2 | TO-39 |
| 17 | μ Α78Μ08 | 8.0 | С | 100 | 160 | 56 | 6.0 | 10.5 to 35 | 2.5 | L-VR2,6 | TO-39,TO-220 |
| 18 | μ Α78C08 | 8.0 | C, V | 100 | 80 | 46 | 6.0 | 11 to 35 | 3.0 | L-VR6 | TO-220 |
| 19 | μ Α78C10 | 10 | С | 100 | 100 | 55 | 6.0 | 13 to 35 | 3.0 | L-VR6 | TO-220 |
| 20 | μ Α78M12 | 12 | М | 60 | 120 | 55 | 6.0 | 15 to 35 | 2.5 | L-VR2 | TO-39 |
| 21 | μ Α78Μ12 | 12 | C, V | 100 | 240 | 55 | 6.0 | 14.5 to 35 | 2.5 | L-VR2,6 | TO-39,TO-220 |
| 22 | μ Α78C12 | 12 | С | 100 | 120 | 46 | 6.0 | 15 to 35 | 3.0 | L-VR6 | TO-220 |
| 23 | μ Α78M15 | 15 | М | 60 | 150 | 54 | 6.0 | 18 to 35 | 2.5 | L-VR2 | TO-39 |
| 24 | μ Α78M15 | 15 | С | 100 | 300 | 54 | 6.0 | 17.5 to 35 | 2.5 | L-VR2,6 | TO-39,TO-220 |

^{*}Operating junction temperature range:

C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

| /OL | TAGE RE | GULA | TOR | 5 (D1 | 001 | PUI | CUr | RRENT) (Cor | it a) | NU FAURIE | |
|------|------------------|---------------------------|---------------|-----------------------------|-----------------------------|------------------------------|-------------------------|--------------------------|----------------------------|--------------------------------|---------------------|
| Item | DEVICE NO. | Output Voltage V (Typ) | Temperature * | Line Regulation mV (Max) | Load Regulation mV (Max) | Ripple Rejection dB (Min) | Quiescent Current mA | Input Voltage Range V | Dropout Voltage V (Typ) | Logic/Connection Diagram(s) | Package(s) |
| Fixe | d Positive 50 | 00 mA (| Cont'd |) | | | | | | Am | 107 Belliaust biset |
| 1 | μ A78C15 | 15 | С | 100 | 150 | 46 | 6.0 | 18 to 35 | 3.0 | L-VR6 | TO-220 |
| 2 | μ Α78C17 | 17 | C | 100 | 170 | 52 | 6.0 | 20 to 35 | 3.0 | L-VR6 | TO-220 |
| 3 | μ Α78C18 | 18 | С | 100 | 180 | 46 | 6.0 | 21 to 35 | 3.0 | L-VR6 | TO-220 |
| 4 | μ Α78M20 | 20 | М | 60 | 200 | 53 | 6.0 | 23 to 40 | 2.5 | L-VR2 | TO-39 |
| 5 | μ Α78M20 | 20 | С | 100 | 400 | 53 | 6.0 | 22.5 to 40 | 2.5 | L-VR2,6 | TO-39,TO-220 |
| 6 | μ Α78C20 | 20 | С | 100 | 200 | 46 | 6.0 | 23 to 40 | 3.0 | L-VR6 | TO-220 |
| 7 | μ Α78C22 | 22 | С | 100 | 220 | 53 | 6.0 | 24.5 to 40 | 2.5 | L-VR6 | TO-220 |
| 8 | μ Α78M24 | 24 | М | 60 | 240 | 50 | 6.0 | 27 to 40 | 2.5 | L-VR2 | TO-39 |
| 9 | μ Α78M24 | 24 | С | 100 | 480 | 50 | 6.0 | 26.5 to 40 | 2.5 | L-VR2,6 | TO-39,TO-220 |
| 10 | μ A78C24 | 24 | С | 100 | 240 | 46 | 6.0 | 27 to 40 | 3.0 | L-VR6 | TO-220 |
| Fixe | d Negative 5 | 00 mA | | es I | 62 01 | 6.8 | 7 6.8 | Too Live | 100 | ta Tra | anzerta e kil |
| 11 | μ Α79M0 5 | -5.0 | М | 50 | 100 | 54 | 2.0 | -7.5 to -35 | 2.5 | L-VR3 | TO-39 |
| 12 | μ Α79M05 | -5.0 | С | 50 | 100 | 54 | 2.0 | -7.3 to -35 | 2.3 | L-VR3,7 | TO-39 |
| 13 | μ Α79M06 | -6.0 | М | 60 | 120 | 54 | 2.0 | -8.5 to -35 | 2.5 | L-VR3 | TO-39,TO-220 |
| 14 | μ Α79M06 | -6.0 | С | 60 | 120 | 54 | 2.0 | -8.3 to -35 | 2.3 | L-VR3,7 | TO-220 |
| 15 | μ Α79Μ08 | -8.0 | М | 80 | 160 | 54 | 2.0 | -10.5 to -35 | 2.5 | L-VR3 | TO-39 |
| 16 | μ Α79Μ08 | -8.0 | С | 80 | 160 | 54 | 2.0 | -10.3 to -35 | 2.3 | L-VR3,7 | TO-39,TO-220 |
| 17 | μ Α79M12 | -12 | М | 80 | 240 | 54 | 3.0 | -14.5 to -35 | 2.5 | L-VR3 | TO-39 |
| 18 | μ Α79Μ12 | -12 | С | 80 | 240 | 54 | 3.0 | -14.3 to -35 | 2.3 | L-VR3,7 | TO-39,TO-220 |
| 19 | μ Α79M15 | -15 | М | 80 | 240 | 54 | 3.0 | -17.5 to -35 | 2.5 | L-VR3 | TO-39 |
| 20 | μ Α79M15 | -15 | С | 80 | 240 | 54 | 3.0 | -17.3 to -35 | 2.3 | L-VR3,7 | TO-39,TO-220 |
| 21 | μ Α79M20 | -20 | М | 80 | 300 | 54 | 3.5 | -22.5 to -40 | 2.5 | L-VR3 | TO-39 |
| 22 | μ Α79M20 | -20 | С | 80 | 300 | 54 | 3.5 | -22.3 to -40 | 2.3 | L-VR3,7 | TO-39,TO-220 |
| 23 | μ Α79M24 | -24 | М | 80 | 300 | 54 | 3.5 | -26.5 to -40 | 2.5 | L-VR3 | TO-39 |
| 24 | μ Α79M24 | -24 | С | 80 | 300 | 54 | 3.5 | -26.3 to -40 | 2.3 | L-VR3,7 | TO-39,TO-220 |

^{*}Operating junction temperature range:
C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

FAIRCHILD LINEAR

VOLTAGE REGULATORS

VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont'd)

| - | | | | | | | | | | | |
|------|----------------|---------------------------|---------------|-----------------------------|-----------------------------|------------------------------|-------------------------|--------------------------|----------------------------|--------------------------------|----------------|
| Item | DEVICE NO. | Output Voltage V (Typ) | Temperature * | Line Regulation mV (Max) | Load Regulation mV (Max) | Ripple Rejection dB (Min) | Quiescent Current mA | Input Voltage Range V | Dropout Voltage V (Typ) | Logic/Connection Diagram(s) | Package(s) |
| Fixe | ed Positiv | e 1.0 A | | | | | | | (B) | (C) ASE | Pixed Negative |
| 1 | μ Α7805 | 5.0 | М | 50 | 50 | 68 | 6.0 | 8.0 to 35 | 3.0 | L-VR10 | TO-3 |
| 2 | μ Α7805 | 5.0 | С | 100 | 100 | 62 | 8.0 | 7.5 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 3 | μΑ309 | 5.0 | С | 50 | 100 | - | 10 | 18 T -0 1 | 46+0 | L-VR10 | TO-3 |
| 4 | μΑ109 | 5.0 | М | 50 | 100 | -1 | 10 | 38 h 2 8 h 3 | iði 🕂 W | L-VR10 | TO-3 |
| 5 | μΑ209 | 5.0 | V | 50 | 100 | - | 10 | 16 J 46 J | 100 ± 0 | L-VR10 | TO-3 |
| 6 | μ A7806 | 6.0 | М | 60 | 60 | 65 | 6.0 | 9.0 to 35 | 3.0 | L-VR10 | TO-3 |
| 7 | μ Α7806 | 6.0 | С | 120 | 120 | 59 | 8.0 | 8.5 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 8 | μ Α7808 | 8.0 | М | 80 | 80 | 62 | 6.0 | 11 to 35 | 3.0 | L-VR6,10 | TO-3,TO-220 |
| 9 | μ Α7808 | 8.0 | С | 160 | 160 | 56 | 8.0 | 10.5 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 10 | μ A7885 | 8.5 | М | 85 | 85 | 60 | 6.0 | 11.5 to 35 | 3.0 | L-VR10 | TO-3 |
| 11 | μ A7885 | 8.5 | С | 170 | 170 | 54 | 8.0 | 11 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 12 | μ A7812 | 12 | М | 120 | 120 | 61 | 6.0 | 15 to 35 | 3.0 | L-VR10 | TO-3 |
| 13 | μ A7812 | 12 | С | 240 | 240 | 55 | 8.0 | 14.5 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 14 | μ A7815 | 15 | М | 150 | 150 | 60 | 6.0 | 18 to 35 | 3.0 | L-VR10 | TO-3 |
| 15 | μ A7815 | 15 | С | 300 | 300 | 54 | 8.0 | 17.5 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 16 | μ Α7818 | 18 | М | 180 | 180 | 59 | 6.0 | 21 to 35 | 3.0 | L-VR10 | TO-3 |
| 17 | μ Α7818 | 18 | С | 360 | 360 | 53 | 8.0 | 20.5 to 35 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| 18 | μ Α7824 | 24 | М | 240 | 240 | 56 | 6.0 | 27 to 40 | 3.0 | L-VR10 | TO-3 |
| 19 | μ Α7824 | 24 | С | 480 | 480 | 50 | 8.0 | 26.5 to 40 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| Fixe | ed Negati | ve 1.0 A | | | 20 44 2 | | | av ac | | | ASSOCIATION. |
| 20 | μ Α7905 | -5.0 | М | 50 | 50 | 54 | 2.0 | -7.8 to -35 | 2.8 | L-VR11 | TO-3 |
| 21 | μ Α7905 | -5.0 | С | 100 | 100 | 54 | 2.0 | -7.3 to -35 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| 22 | μ Α7906 | -6.0 | М | 60 | 60 | 54 | 2.0 | -8.8 to -35 | 2.8 | L-VR11 | TO-3 |
| 23 | μ Α7906 | -6.0 | С | 120 | 120 | 54 | 2.0 | -8.3 to -35 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| 24 | μ Α7908 | -8.0 | М | 80 | 80 | 54 | 2.0 | -10.8 to -35 | 2.8 | L-VR11 | TO-3 |
| | - | | | | | | | | | | |

^{*}Operational junction temperature range: C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

FAIRCHILD LINEAR

VOLTAGE REGULATORS

| VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont' | VOLTAGE | REGULATOR | S (BY | OUTPUT | CURRENT) | (Cont'd) |
|---|---------|-----------|-------|--------|----------|----------|
|---|---------|-----------|-------|--------|----------|----------|

| Item | DEVICE NO. | Output Voltage V (Typ) | Temperature (1) | Line Regulation mV (Max) | Load Regulation mV (Max) | Ripple Rejection dB (Min) | Quiescent Current mA | Input Voltage Range V | Dropout Voltage V (Typ) | Logic/Connection Diagram(s) | Package(s) |
|------|--------------------------------|---------------------------|-----------------|-----------------------------|-----------------------------|------------------------------|-------------------------|--------------------------|----------------------------|--------------------------------|--|
| Fix | ed Negative | 1.0 A (| Cont'd) | | | | | | | | |
| 1 | μ Α7908 | -8.0 | С | 160 | 160 | 54 | 2.0 | -10.3 to -35 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| 2 | μ Α7912 | -12 | М | 120 | 120 | 54 | 3.0 | -14.8 to -35 | 2.8 | L-VR11 | TO-3 |
| 3 | μ Α7912 | -12 | С | 240 | 240 | 54 | 3.0 | -14.3 to -35 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| 4 | μ Α7915 | -15 | М | 150 | 150 | 54 | 3.0 | -17.8 to -35 | 2.8 | L-VR11 | TO-3 |
| 5 | μ A 7915 | -15 | С | 300 | 300 | 54 | 3.0 | -17.3 to -35 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| 6 | μ Α7918 | -18 | М | 180 | 180 | 54 | 3.0 | -20.8 to -35 | 2.8 | L-VR11 | TO-3 |
| 7 | μ Α7918 | -18 | С | 360 | 360 | 54 | 3.0 | -20.3 to -35 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| 8 | μ Α7924 | -24 | М | 240 | 240 | 54 | 3.0 | -26.8 to -40 | 2.8 | L-VR11 | TO-3 |
| 9 | μΑ7924 | -24 | С | 480 | 480 | 54 | 3.0 | -26.3 to -40 | 2.3 | L-VR7,11 | TO-3,TO-220 |
| Fixe | ed Positive 2 | .0 A | 1 10 | D. | es or i | | 08 | 108 788 | H | | TO DAYOUS L |
| 10 | μ А78СВ | 13.8 | С | 150 | 150 | 50 | 8.0 | 17 to 25 | 2.5 | L-VR6,10 | TO-3,TO-220 |
| Fixe | d Positive 3 | .0 A | 1.2 | 8. | | | | DI LUST | 911 | | I ESSAL SE |
| 11 | SH123 | 5.0 | М | 25 | 100 | - | 20 | 7.5 to 20 | 2.5 | H12 | TO-3 |
| 12 | SH223 | 5.0 | М | 25 | 100 | _ | 20 | 7.5 to 20 | 2.5 | H12 | TO-3 |
| 13 | SH323 | 5.0 | С | 25 | 100 | - | 20 | 7.5 to 20 | 2.5 | H12 | TO-3 |
| Fixe | d Positive 5 | .0 A | | | 16 W. | | WE ! | SX USI | | | AU IVALO BI |
| 14 | μ Α78H05 | 5.0 | C, M | 120 | 50 | 60 | 10 | 8.5 to 25 | 3.5 | H12 | TO-3 |
| 15 | μ Α78H05 Α | 5.0 | C, M | 25 | 50 | 60 | 10 | 7.8 to 2.5 | 2.3 | H12 | TO-3 |
| 16 | μ Α78H12 | 12 | С | | 120 | 60 | 10 | 15.5 to 25 | 3.5 | H9 | TO-3 |
| 17 | μ Α78H15 | 15 | С | 30 | 30 | 60 | 10 | 18.5 to 25 | - | Н9 | TO-3 |
| Fixe | d Positive 1 | 0 A | | 3 | | | | FR 1 18 | | | (100 × |
| 18 | μ Α78P05 ⁽²⁾ | 5.0 | С | 25 | 50 | 60 | 10 | 7.5 to 40 | 2.5 | H12 | TO-3 |

^{1.} Operating junction temperature range:

C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

^{2.} To be announced

VOLTAGE REGULATORS

VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont'd)

| Item | DEVICE NO. | Output Current (mA) | Output Voltage Range V | Temperature (1) | Line Regulation %VOUT | Load Regulation | Ripple Rejection dB | Quiescent Current mA | Input Voltage Range V | Dropout Voltage | Logic/Connection Diagram(s) | Package(s) |
|------|-----------------------|---------------------|---------------------------|-----------------|-----------------------|-----------------|------------------------|-------------------------|--------------------------|-----------------|--------------------------------|--------------|
| Posi | tive Adjus | table | | | | | | | | | and the star of | 00.0 |
| 1 | μ Α105 | 12 | 4.5 to 30 | М | 0.06 | 0.1 | 1.0 | 2.0 | 8.5 to 50 | 3.0 | L-VR14 | TO-99 |
| 2 | μ Α305 | 12 | 4.5 to 30 | С | 0.06 | 0.1 | 1.0 | 2.0 | 8.5 to 40 | 3.0 | L-VR14 | TO-99 |
| 3 | μ Α376 | 25 | 5.0 to 37 | С | 0.1 | 0.5 | 1.0 | 2.5 | 9.0 to 40 | 3.0 | L-VR20 | 9Т |
| 4 | μ Α305Α | 45 | 4.5 to 40 | С | 0.06 | 0.4 | - | 2.0 | 8.5 to 50 | 3.0 | L-VR14 | TO-99 |
| 5 | μ Α723 | 150 | 2.0 to 37 | М | 0.3 | 0.15 | 58 | 3.5 | 9.5 to 40 | 3.0 | L-VR15,17 | TO-100,6A |
| 6 | μΑ723 | 150 | 2.0 to 37 | С | 0.5 | 0.2 | 58 | 4.0 | 9.5 to 40 | 3.0 | L-VR15,17 | TO-100,6A,9A |
| 7 | μ Α78MG | 500 | 5.0 to 30 | М | 1.0 | 1.0 | 62 | 5.0 | 7.5 to 40 | 3.0 | L-VR4 | TO-39 |
| 8 | μ Α78MG | 500 | 5.0 to 30 | С | 1.0 | 1.0 | 62 | 5.0 | 7.5 to 40 | 2.5 | L-VR4,8,18 | TO-39,8Z,9V |
| 9 | μ A78G | 1000 | 5.0 to 30 | М | 1.0 | 1.0 | 68 | 5.0 | 7.5 to 40 | 2.5 | L-VR12 | TO-3 |
| 10 | μ A78G | 1000 | 5.0 to 30 | С | 1.0 | 1.0 | 62 | 5.0 | 7.5 to 40 | 3.0 | L-VR8,12 | TO-3,8Z |
| 11 | μ Α78HG | 5000 | 5.0 to 24 | С | 1.0 | 1.0 | 60 | 10 | 8.5 to 25 | 3.5 | H10 | TO-3 |
| Neg | ative Adju | stable | | | | | | | | | | BATA B |
| 12 | μ Α104 | 25 | -0.015 to -40 | М | 0.1 | 5mV | 1.0 | 5.0 | -8.0 to -50 | 2.0 | L-VR16 | TO-100 |
| 13 | μΑ304 | 25 | -0.035 to -30 | С | 0.1 | 5mV | 1.0 | 5.0 | -8.0 to -40 | 2.0 | L-VR16 | TO-100 |
| 14 | μ Α79MG | 500 | -2.23 to -30 | М | 1.0 | 1.0 | 50 | 2.5 | -7.0 to -30 | 2.5 | L-VR5 | TO-39 |
| 15 | μ Α79MG | 500 | -2.23 to -30 | С | 1.0 | 1.0 | 50 | 2.5 | -7.0 to -30 | 2.3 | L-VR5,9,19 | TO-39,8Z,9V |
| 16 | μ A 79G | 1000 | -2.23 to -30 | М | 1.0 | 2.0 | 50 | 2.0 | -7.0 to -40 | 2.8 | L-VR13 | TO-3 |
| 17 | μ Α79 G | 1000 | -2.23 to -30 | С | 1.0 | 2.0 | 50 | 2.0 | -7.0 to -40 | 2.3 | L-VR9,13 | TO-3,8Z |
| 18 | μ Α79HG | 5000 | -2.25 to -24 | C,M | 1.0 | 1.0 | 50 | 5.0 | -7.0 to -40 | 2.0 | H11 | ТО-3 |
| Adju | istable Sw | itchin | g Regulator | | | | | | 1000 | | | |
| 19 | μ A78S | 1500 | -1.3 to -40 | М | _ | | 100 | 2.0 | -2.5 to -40 | _ | L-VR21 | 6B |
| 20 | μ A78S | 1500 | -1.3 to -40 | С | | _ | 100 | 2.0 | -2.5 to - 40 | - | L-VR21 | 6B,9B |
| 21 | SH1605 ⁽²⁾ | 5000 | 2.0 to 20 | C | _ | _ | | 30 | 5.0 to 40 | _ | | |

Operating junction temperature range:
 C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

^{2.} To be announced

FAIRCHILD LINEAR

OPERATIONAL AMPLIFIERS

OPERATIONAL AMPLIFIERS—COMMERCIAL (0°C TO +70°C)

| Item | DEVICE NO. * | Description | Input Offset Voltage mV (Max) | Input Offset Voltage Drift µV/°C (Max) | Input Offset Current nA (Max) | Input Bias Current nA (Max) | Common Mode Range V |
|------|----------------|---|----------------------------------|--|----------------------------------|--------------------------------|------------------------|
| 1 | μ Α301A | General Purpose Op Amp | 7.5 | 30 | 50 | 250 | ±12 |
| 2 | μ Α302 | Voltage Follower | 15 | 30 | | 30 | ±10 |
| 3 | μ Α307 | General Purpose Op Amp | 7.5 | 30 | 50 | 250 | ±15 |
| 4 | μΑ308 | Super Beta Op Amp | 7.5 | 30 | 1.0 | 7.0 | ±13.5 |
| 5 | μ Α308Α | Super Beta Op Amp | 0.5 | 5.0 | 1.0 | 7.0 | ±13.5 |
| 6 | μ Α310 | Voltage Follower | 7.5 | | - | 7.0 | ±10 |
| 7 | μΑ318 | High Speed Op Amp | 10 | _ | 200 | 500 | ±11.5 |
| 8 | μ Α324 | Quad Op Amp | 7.0 | - | 50 | 250 | +13,-V _S |
| 9 | μ Α348 | Quad Op Amp | 6.0 | - | 50 | 200 | ±12 |
| 10 | μ AF355 | FET Input Op Amp | 10 | _ | 0.05 | 0.2 | ±10 |
| 11 | μ AF356 | FET Input Op Amp | 10 | - | 0.05 | 0.2 | ±10 |
| 12 | μ Α702C | WideBand dc Amp | 5.0 | 10 | 2000 | 7500 | -4,+0.5 |
| 13 | μ Α709C | High Perf Op Amp | 7.5 | 1 10 Hz | 500 | 1500 | ±8 |
| 14 | μ Α714C | High Perf Op Amp | 0.15 | 1.8 | 6.0 | 7.0 | ±13 |
| 15 | μ Α714E | High Perf Op Amp | 0.075 | 1.3 | 3.8 | 4.0 | ±13 |
| 16 | μ Α714L | High Perf Op Amp | 0.25 | 3.0 | 20 | 30 | ±13 |
| 17 | μ Α715C | High Speed Op Amp | 7.5 | 65 US 55 | 250 | 1500 | ±10 |
| 18 | μ Α725C | Instr Op Amp | 2.5 | _ | 35 | 125 | ±13.5 |
| 19 | μ Α725E | Instr Op Amp | 0.5 | 2.0 | 5.0 | 75 | ±13.5 |
| 20 | μ Α727C | Temp Controlled Diff Amp | 10 | 1.5 | 25 | 75 | ±12 |
| 21 | μ Α730C | Differential Amp | 5.0 | 91 3 4 5 | 3.0 | 16 | ±3.5 |
| 22 | μ Α740E | FET Input Op Amp | 100 | | 0.3 | 2.0 | ±10 |
| 23 | μ Α741C | Freq Comp Op Amp | 6.0 | _ | 200 | 500 | ±12 |
| 24 | μ Α741E | Freq Comp Op Amp | 3.0 | 15 | 30 | 80 | ±12 |
| 25 | μ Α747C | Dual Freq Comp Op Amp | 6.0 | | 200 | 500 | ±12 |
| 26 | μ Α747E | Dual Freq Comp Op Amp | 3.0 | | 200 | 500 | ±12 |
| 27 | μ Α748C | High Perf Op Amp | 6.0 | | 200 | 500 | ±12 |
| 28 | μ Α776C | Multi-Purpose Prog Op Amp (I _{SET} = 15 μ A) | 6.0 | | 25 | 50 | ±10 |

^{*}Military, automotive and industrial range devices are available. Please request specific data.

| | ection n | on | ent) | Voltage | Supply | | ent | | - | e |
|---------------|-----------------------------|--------------|----------------------------|-------------|-----------|-------------------------------|----------------------------|----------------------------|---------------------|------------------------------------|
| Package(s) | Logic/Connection Diagram | Compensation | Supply Current mA (max) | Max (dyT) V | V (Typ) W | Slew Rate $A_V = 1$ $V/\mu s$ | Output Current mA (Max) | Bandwidth Ay = 1 MHz | Voltage Gain V/V | Differential Input Voltage V |
| TO-99,6A,9 | L-OA9,22 | Odali | 3.0 | ±18 | ±3 | 0.5 | 5.0 | 1.0 | 25K | ±30 |
| TO-9 | L-OA1 | 0 | 5.5 | ±18 | ±12 | 10 | 1.0 | 10 | 0.9985 | 1 |
| TO-99,9 | L-OA2 | 0 | 3.0 | ±18 | ±3 | 0.5 | 5.0 | 1.0 | 25K | ±30 |
| TO-99,9 | L-OA3,27 | 1 | 0.8 | ±18 | ±5 | 0.3 | 1.0 | 1.0 | 15K | ±0.5 |
| TO-99,9 | L-OA3,27 | (1) 15 .ga | 0.8 | ±20 | ±2 | 0.3 | 1.0 | 1.0 | 80K | ±0.5 |
| TO-9 | L-OA1 | 0 | 5.5 | ±18 | ±5 | 30 | 1.0 | 20 | 0.999 | _ |
| TO-9 | L-OA8 | 0 | 10 | ±18 | ±5 | 50 | 6.0 | 15 | 25K | ±10 |
| 6A,9 | L-OA25 | 0 | 2.0 | +32 | +5 | 0.5 | 1.2 | 1.0 | 25K | ±32 |
| 6A,9 | L-OA25 | 0 | 4.5 | ±18 | ±5 | 0.5 | 5.0 | 1.0 | 25K | ±36 |
| TO-99,9 | L-OA8 | 0 | 4.0 | ±18 | ±5 | 5.0 | _ | 2.5 | 50K | ±30 |
| TO-99,9 | L-OA8 | 0 | 10 | ±18 | ±5 | 12 | 0.0 | 5.0 | 50K | ±30 |
| TO-99,6 | L-OA4,17 | 2 | 6.7 | +14,-7 | +6,-3 | 3.5 | 3.5 | 30 | 2K | ±5 |
| TO-99,6A,9A,9 | L-OA5,18 | 0 | 2.9 | ±18 | ±9 | 0.3 | 5.0 | 1.0 | 15K | ±5 |
| TO-9 | L-OA1 | 0 | 5.0 | ±22 | ±3 | 0.25 | 5.5 | 1.2 | | ±30 |
| TO-9 | L-OA1 | 0 | 4.0 | ±22 | ±3 | 0.25 | 6.0 | 1.2 | | ±30 |
| TO-9 | L-OA1 | 0 | 6.0 | ±18 | ±3 | 0.25 | 5.0 | 1.2 | | ±30 |
| TO-100,6 | L-OA12,19 | 3 | 10 | ±18 | ±6 | 100 | 5.0 | 65 | 10K | ±15 |
| TO-9 | L-OA6 | 4 | 3.0 | ±22 | ±3 | | 5.0 | 1.0 | 250K | ±22 |
| TO-9 | L-OA6 | 4 | 3.0 | ±22 | ±3 | _ | 5.0 | 1.0 | 1000K | ±22 |
| TO-10 | L-OA13 | 2 | 5.7 | ±18 | ±9 | 1- | 0.001 | 1.0 | 0.06K | ±15 |
| TO-9 | L-OA7 | 0 | 13 | +14 | +6 | 1 - | | 1.5 | 0.1K | ±5 |
| TO-9 | L-OA8 | 0 | 8.0 | ±22 | ±5 | 6.0 | 5.0 | 3.0 | 25K | ±30 |
| TO-99,6A,9A,9 | L-OA8,20 | 0 | 2.8 | ±18 | ±5 | 0.5 | 5.0 | 1.0 | 20K | ±30 |
| TO-99,6A,9 | L-OA8,20 | 0 | 3.75 | ±22 | ±5 | 0.7 | 5.0 | 1.0 | 50K | ±30 |
| TO-100,6A,9 | L-OA14,21 | 0 | 5.6 | ±18 | ±5 | 0.5 | 5.0 | 1.0 | 20K | ±30 |
| TO-100,6 | L-OA14,21 | 0 | 4.25 | ±18 | ±5 | 0.5 | 5.0 | 1.0 | 20K | ±30 |
| TO-99,6A,6T,9 | L-OA9,22 | no 1:00 c | 2.8 | ±18 | ±5 | 0.5 | 5.0 | 1.0 | 20K | ±30 |
| TO-99,6A,9 | L-OA10,23 | 1 | 0.19 | ±18 | ±1.2 | 0.8 | 2.0 | 1.0 | 50K | ±30 |

OPERATIONAL AMPLIFIERS

OPERATIONAL AMPLIFIERS—COMMERCIAL (0°C TO +70°C) (Cont'd)

| Item | DEVICE NO. | Description | Input Offset Voltage mV (Max) | Input Offset Voltage Drift μV/°C (Max) | Input Offset Current nA (Max) | Input Bias Current nA (Max) | Common Mode Range V |
|------|-------------------------|--|----------------------------------|--|----------------------------------|--------------------------------|------------------------|
| 1 | μ Α776C | Multi-Purpose Prog Op Amp (I _{SET} = 1.5 μ A) | 6.0 | 88-1 | 6.0 | 10 | ±10 |
| 2 | μ Α777C | Precision Op Amp | 7.5 | | 50 | 250 | ±12 |
| 3 | μ Α791C | Power Operational Amp | 6.0 | _ | 200 | 500 | ±12 |
| 4 | μ Α798C | Dual Op Amp | 6.0 | | 50 | 250 | +36,-V _S |
| 5 | μ Α1458C | Internally Comp, High Perf Dual Mono Op Amp | 6.0 | | 200 | 500 | ±12 |
| 6 | μ Α3401 | Quad Single Supply Amp | 10°- | (i) _ | | 300 | |
| 7 | μ Α3403 | Quad Op Amp | 8.0 | | 50 | -500 | +13,-V _S |
| 8 | μ A4136 | Quad Op Amp | 6.0 | 8.1 <u>— [</u> | 200 | 500 | ±12 |
| 9 | μ Α4558 | Dual Op Amp | 6.0 | 38-1 | 200 | 500 | ±12 |
| 10 | SH0002 ⁽²⁾ | Current Amp | 30 | _ | 8 2 | 10K | |
| 11 | SH2714 (2) | Dual Instrumentation Amp | 0.25 | 3.0 | 20 | 30 | ±18 |
| 12 | SH3006 ^(2,3) | I. 0 GHz Preamp | ar_1 | 88-1 | _ | 將三 | |
| 13 | SH3015 ^(2,3) | Servo Amp | 6.0 | 92_{ | 200 | 500 | ±12 |

^{1.} Military, automotive and industrial range devices are available. Please request specific data.

VOLTAGE COMPARATORS

| 9-OT | | 40-1 F 05 35 | 181 - | 0.81 | 19095 | SEL |
|------|----------------|--|--|--|--|-----------------------|
| Item | DEVICE NO. | Description | Input Bias Current ⁽¹⁾ μA (Max) | Input Offset Current ⁽¹⁾ μA (Max) | Input Offset Voltage ⁽¹⁾ | Voltage Gain (Typ) |
| 14 | μ AF111 | Voltage Comparator (FET Front End Inputs) | 0.05 | 0.000025 | 4.0 | 200K |
| 15 | μ AF211 | Voltage Comparator (FET Front End Inputs) | 0.05 | 0.000025 | 4.0 | 200K |
| 16 | μ AF311 | Voltage Comparator (FET Front End Inputs) | 0.15 | 0.000075 | 10 | 200K |

Notes on following pages.

^{2.} Also see Hybrid Section

^{3.} To be announced

| _ 0 | - | | ent | | Supply | Voltage | rent | on Is | ection | |
|------------------------------------|---------------------|----------------------------|----------------------------|---|-----------|-------------|----------------------------|--------------|-----------------------------|-------------|
| Differential Input Voltage V | Voltage Gain V/V | Bandwidth Ay = 1 MHz | Output Current mA (Max) | Slew Rate A _V = 1 V/μs | V (Typ) W | Max (dkT) v | Supply Current mA (max) | Compensation | Logic/Connection Diagram | Package(s) |
| ±30 | 50K | 0.2 | 0.12 | 0.1 | ±1.2 | ±18 | 0.03 | 1 | L-OA10,23 | TO-99,6A,9T |
| ±30 | 25K | 1.0 | 5.0 | 0.5 | ±5 | ±20 | 2.8 | 1 | L-OA9,22 | TO-99,6A,9T |
| ±30 | 20K | 1.0 | 1080 | 0.5 | ±5 | ±18 | 25 | 4 | L-OA15,16 | TO-100,9W |
| ±30 | 20K | 1.0 | 6.0 | 0.5 | . +5 | +36 | 4.0 | 0 | L-OA11 | ТО-99,6Т,9Т |
| ±30 | 20K | 1.0 | 5.0 | 0.5 | ±5 | ±18 | 2.9 | 0 | L-OA11 | TO-99,9T |
| | 1K | 5.0 | 10 | 0.6 | +5 | ±9 | 10 | 0 | L-OA24 | 9A |
| ±30 | 25K | 1.0 | 5.0 | 0.6 | +5 | +18 | 7.0 | 0 | L-OA25 | 6A,9A |
| ±36 | 20K | 3.0 | 5.0 | 1.2 | ±5 | ±18 | 10 | 0 | L-OA26 | 6A,9A |
| ±36 | 20K | 3.0 | 5.0 | 1.2 | ±5 | ±18 | 5.0 | 0 | L-OA11 | TO-99,9T |
| | 0.97 | 50 | 100 | 200 | ±5 | ±20 | ±10 | 0 | H1 | TO-99 |
| 30 | 150 | 1.2 | 5.0 | 0.25 | ±3 | ±10 | 12 | 0 | H2 | 6A |
| Morn. | 200 | >1K | - | _ | +12 | +18 | - | 0 | | AgesA. T |
| _ | | _ | 10K | 1.0 | ±12 | ±40 | 30 | 0 | - I | |

| Supply Voltage V (Typ) | Response Time ⁽²⁾ ns (Typ) | DTL/TTL Fanout | Temperature Range ⁽³⁾ | Logic/Connection Diagram | Package(s) |
|---------------------------|--|-------------------|----------------------------------|-----------------------------|------------|
| +36 | 200 | 2 | М | L-OA28,29 | TO-99 |
| +36 | 200 | 2 | А | L-OA28,29 | TO-99 |
| +36 | 200 | 2 | С | L-OA28,29 | TO-99 |

VOLTAGE COMPARATORS (Cont'd)

| Item | DEVICE NO. | Description | Input Bias Current ⁽¹⁾ μA (Max) | Input Offset Current ⁽¹⁾ μA (Max) | Input Offset Voltage ⁽¹⁾ | Voltage Gain (Typ) |
|------|----------------|--|--|--|--|-----------------------|
| 1 | μ Α111 | Voltage Comparator (Strobed Inputs, Single Supply, Low IB) | 0.1 | 0.04 | 0.7 | 200K |
| 2 | μ Α211 | Voltage Comparator (Strobed Inputs, Single Supply, Low IB) | 0.1 | 0.04 | 0.7 | 200K |
| 3 | μ Α311 | Voltage Comparator (Strobed Inputs, Single Supply, Low IB) | 0.25 | 0.06 | 2.0 | 200K |
| 4 | μ Α139 | Quad Comparator (Single Supply, MRR incl. gnd) | 0.1 | 0.025 | 5.0 | 200K |
| 5 | μ Α139Α | Quad Comparator (Single Supply, MRR incl. gnd) | 0.1 | 0.025 | 2.0 | 200K |
| 6 | μ Α239 | Quad Comparator (Single Supply, MRR incl. gnd) | 0.25 | 0.05 | 5.0 | 200K |
| 7 | μ Α239Α | Quad Comparator (Single Supply, MRR incl. gnd) | 0.25 | 0.05 | 2.0 | 200K |
| 8 | μ Α339 | Quad Comparator (Single Supply, MRR incl. gnd) | 0.25 | 0.05 | 5.0 | 200K |
| 9 | μ Α339Α | Quad Comparator (Single Supply, MRR incl. gnd) | 0.25 | 0.05 | 2.0 | 200K |
| 10 | μ Α710 | Voltage Comparator | 20/25 | 3.0/5.0 | 2.0/5.0 | 1.75K |
| 11 | μ Α711 | Dual Comparator | 75/100 | 10/15 | 3.5/5.0 | 1.5K |
| 12 | μ Α734 | Precision Comparator (Low Drift -3.5μV/°C) | 0.15 | 0.025/0.05 | 5.0/3.0 | 25K |
| 13 | μ Α760 | High Speed Differential Comparator | 60 | 7.5 | 6.0 | 5K |
| 14 | μ Α775 | Quad Comparator (Single Supply, MRR incl. gnd) | 0.3 | 0.07 | 9.0 | 200K |
| 15 | μ Α2901 | Quad Comparator (Single Supply, MRR incl. gnd) | 0.25 | 0.05 | 7.0 | 200K |
| 16 | μΑ7302 | Quad Comparator (Single Supply, MRR incl. gnd) | 0.1 | 0.03 | 5.0 | 200K |

^{1.} Measured at T_A = 25°C

^{2.} Response time is specified for 100 mV step input with 5.0 mV overdrive.

^{3.} M = Military temperature range, -55°C to +125°C; A = Automotive temperature range, -40°C to +85°C; C = Commercial temperature range, 0°C to +70°C.

| Supply Voltage V (Typ) | Response Time ⁽²⁾ ns (Typ) | DTL/TTL Fanout | Temperature Range ⁽³⁾ | Logic/Connection Diagram | Package(s) |
|--|--|-------------------|----------------------------------|-----------------------------|-----------------|
| 0, +5 to ±15 | 200 | 5 | М | L-OA28,29 | TO-99, 6T |
| 0, +5 to ±15 | 200 | 5 | A | L-OA28,29 | TO-99, 6T |
| 0, +5 to ±15 | 200 | 5 | С | L-OA28,29 | TO-99,6T |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | М | L-OA30 | 6A |
| \pm 1 to \pm 18, gnd to +2 or gnd to +36 | 1300 | 1 - | М | L-OA30 | 6A |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | А | L-OA30 | 6A,9A |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | A | L-OA30 | 6A,9A |
| \pm 1 to \pm 18, gnd to +2 or gnd to +36 | 1300 | 1 | С | L-OA30 | 6A,9A |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | С | L-OA30 | 6A |
| +12,-6 | 40 | 1 | M,C | L-OA31,32,33 | TO-99,3F,6A,9A |
| +12,-6 | 40 | 1 | M,C | L-OA34,35,36 | TO-100,3F,6A,9A |
| ±5 to ±15 | 200 | 2 | M,C | L-OA37,38 | TO-100,6A |
| ±4.5 to ±6.5 | 25 | 2 | M,C | L-OA39,40 | TO-99,6A |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | M,C | L-OA30 | 6A,9A |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | А | L-OA30 | 9A |
| ±1 to ±18, gnd to +2 or gnd to +36 | 1300 | 1 | С | L-OA30 | 6A,9A |

FAIRCHILD LINEAR

CONSUMER CIRCUITS

AUDIO POWER AMPLIFIERS

| Item | DEVICE NO. | Features | Power Supply Voltage V | Speaker Impedance | Power Output W | Logic/ Connection Diagram | Package(s) |
|------|----------------|---|---------------------------------|--------------------------|----------------------------|---------------------------------|---------------------|
| 1 | TBA641A12 | High current capability | 9.0 | 4.0 | 2.2 | L-C12 | 9H (Quil) |
| 2 | TBA641B11 | High current capability | 14 | 4.0 | 4.5 | L-C12 | 9J (Quil) |
| 3 | TBA800 | Suitable for 24 V supply operation; eg: TV | 24 | 16 | 5.0 | L-C11 | 9W-P3 |
| 4 | TBA800A | Suitable for 24 V supply operation; eg: TV | 24 | 16 | 5.0 | L-C11 | 9W-P4 |
| 5 | TBA810S | Thermal shutdown | 14.4 | 4.0 | 6.0 | L-C10 | 9W-P3 |
| 6 | TBA810AS | Thermal shutdown | 1,4.4 | 4.0 | 6.0 | L-C10 | 9W-P4 |
| 7 | TBA810DS | Thermal shutdown over voltage protection | 14.4 | 4.0 | 6.0 | L-C10 | 9W-P3 |
| 8 | TBA810DAS | Thermal shutdown over voltage protection | 14.4 | 4.0 | 6.0 | L-C10 | 9W-P4 |
| 9 | TBA820 | Low power supply operation- suitable for battery operation | 12 9.0 6.0 3.5 | 8.0 8.0 4.0 4.0 | 2.0 1.2 0.75 0.22 | L-C29 | 9A (Quil) |
| 10 | TBA820L | Low power supply operation- suitable for battery operation | 12 9.0 6.0 3.5 | 8.0 8.0 4.0 4.0 | 2.0 1.2 0.75 0.22 | L-C29 | 9A |
| 11 | TDA2002 | Thermal shutdown, over voltage protection, short circuit protection | 16 14.4 14.4 | 2.0 2.0 4.0 | 10 8.0 5.0 | L-C1 | GO (TO-220 type) |
| 12 | TDA2002A | Thermal shutdown, short circuit protection | 16 14.4 14.4 | 2.0 2.0 4.0 | 10 8.0 5.0 | L-C1 | GO (TO-220 type) |
| 13 | μΑ706Α | High current capability | 9.0 | 4.0 | 2.2 | L-C12 | 9H |
| 14 | μ Α706B | High current capability | 14 | 4.0 | 5.5 | L-C12 | 9J |
| 15 | μ Α783 | Thermal shutdown (operation from 4.0 to 30 V) | 24 | 8.0 | 9.0 | L-C10 | 9W-P3,P4 |

TELEVISION CIRCUITS

| Item | DEVICE NO. | Description | Usefu | ul for | Logic/Connection Diagram(s) | | |
|------|------------|--------------------|-------|--------|-----------------------------|------------|--|
| | | | NTSC | PAL | | Package(s) | |
| 16 | TAA630S | Chroma Demodulator | | X | L-C33 | 9B | |
| 17 | TBA510 | Chroma Processor | | X | L-C44 | 9B | |
| 18 | TBA520 | Chroma Demodulator | | X | L-C45 | 9B | |

CONSUMER CIRCUITS

RADIO AUDIO GIRCLATE

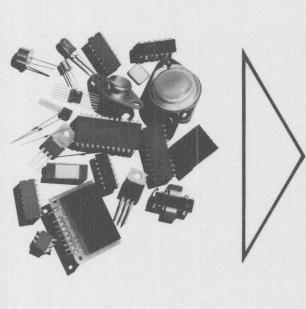
TELEVISION CIRCUITS (Cont'd)

| | 8000 | Lugar Conne | Usef | ul for | Logic/Connection | |
|------|----------------|---|-----------|-------------|------------------|------------|
| Item | DEVICE NO. | Description | NTSC | PAL | Diagram(s) | Package(s) |
| 1 | TBA530 | RGB Matrix Preamplifier | X | X | L-C43 | 9B |
| 2 | TBA540 | Reference Combination | | X | L-C31 | 9B |
| 3 | TBA560C | Luma & Chroma Control Combination | 100 (4) 1 | Х | L-C32 | 9B |
| 4 | TBA920 | Horizontal Oscillator | X | X | L-C34 | 9B |
| 5 | TBA920S | Horizontal Oscillator | X | X | L-C34 | 9B |
| 6 | TBA970 | Video Amplifier | X | X | L-C35 | 9B |
| 7 | TBA990 | Chroma Demodulator | MaraA H | X | L-C36 | 9B |
| 8 | TDA1190 | TV Sound System | X | X | L-C8 | 9W |
| 9 | TDA1190Z | TV Sound System | X | X | L-C8 | 9W |
| 10 | TDA2510 | Chroma Combination | X | X | L-C47 | 9B |
| 11 | TDA2521 | Chroma Demodulator | 107368 | X | L-C46 | 9B |
| 12 | μ Α746 | Chroma Demodulator | X | Stabilita J | L-C17 | TO-100, 9A |
| 13 | μ Α780 | PLL Chroma Subcarrier Regenerator | X | C) satisfic | L-C39 | 9B |
| 14 | μ Α781 | Gain Controlled Chroma Amplifier | X | end one | L-C21 | 9A |
| 15 | μ Α787 | Chroma Processor | X | BING PRISE | L-C40 | 9B |
| 16 | μ Α788 | Chroma Demodulator— DC Tint Control | X | | L-C41 | 9B |
| 17 | μ Α796 | Double Balanced Modulator/ Demodulator | X | X | L-C4, 22 | TO-100, 9A |
| 18 | μ Α1391 | Horizontal Processor (+ Flyback) | Х | X | L-C7 | 9Т |
| 19 | μ Α1394 | Horizontal Processor (- Flyback) | X | X | L-C7 | 9T |
| 20 | μ A3064 | Automatic Fine Tuning | X | | L-C25 | TO-100,9A |
| 21 | μ Α3065 | Sound IF | X | X | L-C26 | 9A |

RADIO-AUDIO CIRCUITS

| Item | DEVICE NO. | Description | Logic/Connection Diagram(s) | Package(s) |
|--------|------------------|---|-----------------------------|------------------------------|
| IF, RF | Amplifiers, Gain | Blocks, Detectors, Decoders | ert xidetti 60ir | CARPT |
| 1 | μΑ703 | IF, RF Amplifier | L-C2 | TO-99 |
| 2 | μΑ720 | AM Radio Circuit (RF, Converter, IF) | L-C13 | 6A,9A |
| 3 | μ Α721 | AM/FM IF Amplifier, FM Limiter, Detector | L-C37 | 9B |
| 4 | μΑ732 | Stereo Decoder | L-C14 | 9A |
| 5 | μΑ753 | FM Gain Block | L-C5 | 9T |
| 6 | μΑ757 | Gain Controlled IF Amplifier | L-C19 | 6A |
| 7 | μΑ758 | PLL Stereo Decoder | L-C38 | 9B |
| 8 | μΑ767 | Stereo Decoder | L-C20 | 9A |
| 9 | μΑ1310 | PLL Stereo Decoder | L-C23 | 9A |
| 10 | μ A2136 | FM IF Limiter Detector | L-C24 | 9A |
| 11 | μΑ3075 | FM IF Limiter Detector | L-C27 | 9A |
| 12 | μΑ3089 | FM IF Limiter Detector | L-C42 | 9B |
| Pream | nplifiers | | | |
| 13 | μΑ739 | Dual Audio Preamplifier | L-C15 | 6A,9A |
| 14 | μΑ749 | Dual Audio Preamplifier | L-C3, 18 | TO-99,6A,9A |
| Dolby | TAGE | X Audigs | principal Compa | BAYAL I B |
| 15 | μΑ7300 | Dolby "B" Noise Reduction | L-C48 | 9B |
| Specia | al Functions | On the transfer of | ne salam alukata | PERSONAL PROPERTY. |
| 16 | SH1549* | Station Memory Control Hybrid | H4 | 1" x 2" Single In-line |
| 17 | SH1552* | Ladder Network for Signal Conversion | НЗ | 1" x 2" Single In-line |
| 18 | μΑ742 | Zero Crossing ac Trigger Trigac | L-C16 | 6A |
| 19 | μΑ7390 | Ground Fault Detector | L-C6 | 9Т |
| 20 | μΑ7391 | 2.0 A Motor Speed Control | L-C9 | 9W-P6 |
| 21 | μΑ7392 | 300 mA Motor Speed Control | L-C30 | 6A, 9A |

^{*} For further information contact Hybrid Marketing



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LINE DRIVERS/RECEIVERS/TRANSCEIVERS

LINE DRIVERS

| Item | DEVICE NO. ⁽¹⁾ | Function ⁽²⁾ | Companion Receiver | Compatibility | Type Output | Output Configuration | Output Current mA (Typ) | (dkT) sn-bd | Supply Voltage V | Power Dissipation mW (Typ) | Drivers per Package | Logic/Connection Diagram(s) | Package(s) |
|------|--------------------------------|-------------------------|-----------------------|---------------|-------------|-------------------------|----------------------------|-------------|---------------------|-------------------------------|---------------------|--------------------------------|--------------|
| 1 | μ Α1488 | Quad | μA1489 | TTL | Volt | Single Ended | ±10 | 220 | ±15 | 6.0 - | 4 | 149 | 6A,9A |
| 2 | 54/7437 | Quad 2- NAND | Any | TTL | Volt | Single Ended | 48 | 10 | +5.0 | 108 | 4 | D2 | 31, 6A,9A |
| 3 | 54/7438 | Quad 2- NAND | 96106 | TTL | Volt | Single Ended | 48 | 13 | +5.0 | 98 | 4 | D2 | 3I, 6A,9A |
| 4 | 54/7440 | Dual 2- NAND | Any TTL | TTL | Volt | Single Ended | 48 | 11 | +5.0 | 52 | 2 | D5 | 31, 6A,9A |
| 5 | 54H/74H40 | Dual 2- NAND | Any TTL | TTL | Volt | Single Ended | 48 | 7.0 | +5.0 | 88 | 2 | D5 | 3I, 6A,9A |
| 6 | 54S/74S40 | Dual 2- NAND | Any TTL | TTL | Volt | Single Ended | 48 | 4.0 | +5.0 | 88 | 2 | D5 | 31, 6A,9A |
| 7 | 8T13 | Dual | 8T14 | TTL | Volt | Single Ended | 250 ⁽³ | 20 | +5.0 | 280 | 2 | 121 | 4L 6B,9B |
| 8 | 8T23 | Dual IBM-370 | 8T24 | TTL | Volt | Single Ended | 250 ⁽³ | 20 | +5.0 | 280 | 2 | 121 | 6B,9B |
| 9 | 9009 | Dual 2- NAND | Any TTL | TTL | Volt | Single Ended | 48 | 10 | +5.0 | 54 | 2 | D5 | 31,6A |
| 10 | 9612 | Dual | 9613 | TTL | Volt | Diff | 50 | 14 | +5.0 | 150 | 2 | 123 | 6T,9T |
| 11 | 9614 | Dual | 9615 | TTL | Volt | Diff or Single | 40 | 16 | +5.0 | 170 | 2 | 12 | 4L 6B,9B |
| 12 | 9616 | Triple RS232 | 9617, 9627 | TTL | Volt | Single Ended | 17 | 300 | ±12 | 250 | 3 | 14 | 3I 6A,9A |
| 13 | 9621 | Dual | 9622 | TTL | Volt | Diff or Single | 20 | 10 | +5.0, +15 | 100 | 2 | 17 | 31,6A |
| 14 | 9634 | Dual | 9637A | TTL, CMOS | Volt | Diff | ±50 | 10 | +5.0 | 200 | 2 | 133 | 4L 6B,9B |
| 15 | 9636 | Dual | 9637A | TTL, CMOS | Volt | Single Ended | ±75 | 2 | ±9.0 to ±15 | 200 | 2 | 134 | 6T,9T |
| 16 | 9638 | Dual | 9637A | TTL | Volt | Diff | ±50 | 10 | +5.0 | | 2 | 136 | 6T,9T |
| 17 | 10123/ 10523 ⁽⁴⁾ | Triple Bus Dvr | All 10K ECL | ECL | Volt | Single Ended | 20 | 3.0 | -5.2 | 312 | 3 | E78 | 4L, 6B,9B |

In some cases, only commercial temperature range devices are listed. Please request specific information for military versions.
 OC = open collector, 3S = 3-state
 Foldback current limited
 105XX and 106XX denote military temperature range

LINE DRIVERS (Cont'd)

| Item | DEVICE NO. ⁽¹⁾ | Function ⁽²⁾ | Companion Receiver | Input Compatibility | Type Output | Output Configuration | Output Current mA (Typ) | tpd-ns (Typ) | Supply Voltage | Power Dissipation mW (Typ) | Drivers per Package | Logic/Connection Diagram(s) | Package(s) |
|------|--------------------------------|----------------------------|----------------------------|------------------------|-------------|-------------------------|----------------------------|--------------|----------------|-------------------------------|---------------------|--------------------------------|-----------------|
| 1 | 10192/ 10592 ⁽⁴⁾ | Quad | All ECL Logic | ECL | Volt | Single Ended | 16 | 3.0 | -5.2 | 510 | 4 | E105 | 4L,6B |
| 2 | 54S/ 74S140 | Dual 2- NAND | Any TTL | TTL | Volt | Single Ended | 40 | 4.0 | +5.0 | 88 | 2 | D5 | 3I, 6A,9A |
| 3 | 54LS/ 74LS240 | Octal Inverting Bus Dvr | Any TTL | TTL | Volt | Single Ended | 40 | 12 | +5.0 | 175 | 8 | D73 | 9Z |
| 4 | 54LS/ 74LS241 | Octal Bus Dvr | Any TTL | TTL | Volt | Single Ended | 40 | 12 | +5.0 | 180 | 8 | D74 | 9Z |
| 5 | 54LS/ 74LS244 | Octal Bus Dvr | Any TTL | TTL | Volt | Single Ended | 40 | 12 | +5.0 | 180 | 8 | D77 | 9Z |
| 6 | 54LS/ 74LS540 | Octal 3S Inverting | Any TTL | TTL | Volt | Single Ended | 40 | 12 | +5.0 | 175 | 8 | D80 | 9Z |
| 7 | 54LS/ 74LS541 | Octal 3S | Any TTL | TTL | Volt | Single Ended | 40 | 12 | +5.0 | 180 | 8 | D81 | 9Z |
| 8 | 55/75109 | Dual | 75107, 75108 | TTL | Curr | Diff | 6.0 | 9.0 | ±5.0 | 180 | 2 | 114 | 3I 6A,9A |
| 9 | 55/75110 | Dual | 75107, 75108 | TTL | Curr | Diff | 12 | 9.0 | ±5.0 | 285 | 2 | 114 | 3I 6A,9A |
| 10 | 55/75121 | Dual | 75122 | TTL | Volt | Single Ended | 250 ⁽³⁾ | 20 | +5.0 | 280 | 2 | 121 | 6B,9B |
| 11 | 75123 | Dual IBM-370 | 75124 | TTL | Volt | Single Ended | 250 ⁽³⁾ | 20 | +5.0 | 280 | 2 | 121 | 6B,9B |
| 12 | 75150 | Quad | 75154 | TTL DTL | Volt | Single Ended | 15 | 20 | ±12 | 100 | 2 | I51, 52 | 6A,6T, 9A,9T |
| 13 | 96101 | Quad 2- NAND OC | 96106 | TTL | Volt | Single Ended | 80 | 13 | +5.0 | 98 | 4 | D3 | TO-86 6A,9A |
| 14 | 100123 | Hex Bus Dvr | All 95K and 100K ECL | ECL | Volt | Single Ended | 20 | 1.8 | -4.5 | 730 | 6 | E14 | 4Q |
| 15 | 100194 | Quint Duplex Bus Dvr | All 100K ECL | ECL | Volt | | | 2.0 | -4.5 | folial (Suss.) | | E110 | 4Q,6Q |

^{1.} In some cases, only commercial temperature range 2. OC = open collector, 3S = 3-state devices are listed. Please request specific 3. Foldback current limited information for military versions.

^{4. 105}XX and 106XX denote military temperature range

FAIRCHILD INTERFACE

LINE DRIVERS/RECEIVERS/TRANSCEIVERS

LINE RECEIVERS

| Item | DEVICE NO. ⁽¹⁾ | Function | Companion Driver | Output Compatibility | Input Threshold Sensitivity VTH-V | Common Mode | Hysteresis Capability | tpd-ns (Typ) | Supply Voltage | Power Dissipation mW (Typ) | Receivers per Package | Logic/Connection Diagram | Package(s) |
|------|--------------------------------|------------------------------|------------------------|----------------------|--------------------------------------|-------------|-----------------------|--------------|----------------|-------------------------------|-----------------------|-----------------------------|-------------|
| 1 | μΑ1489 | Quad RS232 | μΑ1488 | TTL | +0.5 | ±30 | 0.25V | 220 | _ | - | 4 | 150 | 6A,9A |
| 2 | μ Α1489A | Quad RS232 | μΑ1488 | TTL | +0.5 | ±30 | 1.0V | 25 | - | 2(-), | 4 | 150 | 6A,9A |
| 3 | 8T14 | Triple | 8T13 | TTL | - | +5.0 | Yes | 20 | +5.0 | 315 | 3 | 122 | 6B,9B |
| 4 | 8T24 | Triple IBM-370 | 8T23 | TTL | | +5.0 | Yes | 20 | +5.0 | 315 | 3 | 122 | 6B,9B |
| 5 | 9582 | Triple | All ECL Logic | ECL | VREF | ±1.0 | No | 2.2 | -5.2 | 250 | 3 | E22 | 6B |
| 6 | 9613 | Dual Diff | 9612 | TTL | ±0.5 | ±15 | No | 25 | +5.0 | 143 | 2 | 124 | 6T,9T |
| 7 | 9615 | Dual Diff | 9614 | TTL | ±1.0 | ±15 | No | 30 | +5.0 | 150 | 2 | 13 | 4L,6B,9B |
| 8 | 9617 | Triple RS232 | 9616 | TTL | +1.5 | ±25 | Yes | 60 | +5.0 | 60 | 3 | 15 | 6A |
| 9 | 9620 | Dual Diff | 9621 | TTL | ±0.5 | ±15 | No | 35 | +5.0 -12 | 110 | 2 | 16 | 31,6A |
| 10 | 9622 | Dual | 9621 | TTL | +1.5 | ±10 | No | 38 | +5.0 -12 | 140 | 2 | 18 | 31,6A |
| 11 | 9627 | Dual RS232/ mil. std. 188 | 9616 | TTL | +0.45 | ±25 | No | 70 | ±12 | 234 | 2 | 111 | 4L 6B,9B |
| 12 | 9637A | Dual RS422/423 | 9634, 9636, 9638 | TTL | +0.2 | ±15 | 0.3V | 17 | +5.0 | - 8 | 2 | 135 | 6T,9T |
| 13 | 10014 | Active Terminator | All ECL Logic | ECL | V _{REF} | - | No | - | -5.2 | 65 | 14 | E18 | 4L 6B,9B |
| 14 | 10114/ 10514 ⁽²⁾ | Triple | All ECL Logic | ECL | VREF | ±1.0 | No | 2.2 | -5.2 | 145 | 3 | E24 | 4L 6B,9B |
| 15 | 10115/ 10515 ⁽²⁾ | Quad | All ECL Logic | ECL | VREF | +2.0 | No | 1.9 | -5.2 | 95 | 4 | E23 | 4L 6B,9B |
| 16 | 10116 | Triple | All ECL Logic | ECL | VREF | +2.0 | No | 1.9 | -5.2 | 75 | 3 | E24 | 4L 6B,9B |
| 17 | 55/75107 | Dual | 75109 75110 | TTL | ±25 | ±3.0 | No | 17 | ±5.0 | 130 | 2 | 113 | 3I 6A,9A |
| 18 | 55/75108 | Dual | 75109 75110 | TTL | ±25 | ±3.0 | No | 19 | ±5.0 | 130 | 2 | 113 | 3I 6A,9A |

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

^{2. 105}XX and 106XX denote military temperature range.

FAIRCHILD INTERFACE

LINE DRIVERS/RECEIVERS/TRANSCEIVERS

LINE RECEIVERS (Cont'd)

| Item | DEVICE NO. ⁽¹⁾ | Function | Companion Driver | Output Compatibility | Input Threshold Sensitivity VTH-V | Common Mode | Hysteresis Capability | tpd-ns (Typ) | Supply Voltage | Power Dissipation mW (Typ) | Receivers per Package | Logic/Connection Diagram | Package(s) |
|------|---------------------------|-------------------|------------------|----------------------|--------------------------------------|-------------|-----------------------|--------------|----------------|-------------------------------|-----------------------|-----------------------------|----------------|
| 1 | 55/75122 | Triple | 75121 | TTL | | +5.0 | Yes | 20 | +5.0 | 315 | 3 | 122 | 6B,9B |
| 2 | 75124 | Triple IBM-370 | 75123 | TTL | _ | +5.0 | Yes | 20 | +5.0 | 315 | 3 | 122 | 6B,9B |
| 3 | 75154 | Quad RS232 | 75150 | TTL, DTL | 2.2 | ±15 | Yes | 22 | +5.0 +12 | 200 | 4 | 138 | 6A,9A |
| 4 | 75207 | Dual | 75109 75110 | TTL | ±10 | ±3.0 | No | 17 | ±5.0 | 130 | 2 | 113 | 6A,9A |
| 5 | 75208 | Dual | 75109 75110 | TTL | ±10 | ±3.0 | No | 19 | ±5.0 | 130 | 2 | 113 | 6A,9A |
| 6 | 95115 | Quad | All ECL Logic | ECL | VREF | +2.0 | No | 1.9 | -5.2 | 95 | 4 | E23 | 6B |
| 7 | 95116 | Triple | All ECL Logic | ECL | VREF | +2.0 | No | 1.9 | -5.2 | 75 | 3 | E24 | 6B |
| 8 | 96106 | Quad 2-NOR Bus | 96101 | TTL | 1.5 | - | No | 20 | +5.0 | 90 | 4 | D39 | TO-86 6A,9A |
| 9 | 100114 | Quint | All ECL Logic | ECL | VREF | ±1.0 | No | 1.2 | -4.5 | 380 | 5 | E25 | 4Q |

TRANSCEIVERS

| Item | DEVICE NO. | Function (2) | Driver Output Current-mA | Receiver Output Current-mA | Hysteresis Capability | Receiver tpd-ns | Driver tpd-ns | Tranceivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------|-------------------|-----------------------------|-------------------------------|--------------------------|--------------------|------------------|----------------------------|-----------------------------|------------|
| 10 | 8T26 | Quad 3S | 40 | 16 | | 13 | 16 | 4 | 153 | 6B,9B |
| 11 | 8T28 | Quad 3S | 40 | 16 | _ | 13 | 16 | 4 | 154 | 6B,9B |
| 12 | 9640/26S10 | Quad OC Inverting | 100 | 20 | _ | 15 | 18 | 4 | 137 | 6B,9B |
| 13 | 9641/26S11 | Quad OC | 100 | 20 | - | 15 | 20 | 4 | 155 | 6B,9B |
| 14 | 9642 | Quad OC Inverting | 100 | 20 | 0.6V | 15 | 18 | 4 | 156 | 6B,9B |

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

^{2.} OC = open collector, 3S = 3-state

LINE DRIVERS/RECEIVERS/TRANSCEIVERS

TRANCEIVERS (Cont'd)

| Item | DEVICE NO. | Function (2) | Driver Output Current-mA | Receiver Output Current-mA | Hysteresis Capability | Receiver tpd-ns | Driver tpd-ns | Tranceivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------------------------|-------------------|-----------------------------|-------------------------------|--------------------------|--------------------|------------------|----------------------------|-----------------------------|------------|
| 1 | 54LS/74LS242 | Quad Inverting 3S | 40 | 40 | 0.4V | 12 | 12 | 4 | D75 | 31,6A,9A |
| 2 | 54LS/74LS243 | Quad 3S | 40 | 40 | 0.4V | 12 | 12 | 4 | D76 | 31,6A,9A |
| 3 | 54LS ⁽¹⁾ /74LS245 | Octal 3S | 40 | 40 | 0.4V | 12 | 12 | 8 | D79 | 9Z |
| 4 | 100194(1) | Duplex | _ | _ | _ | 2.0 | 1.1 | 5 | E110 | 4Q,6Q |

DISPLAY DRIVERS

DISPLAY DRIVERS

| Item | DEVICE NO. | Function (2) | Input Compatibility | BCD Decoder | Ripple Blanking | Blanking Above BCD 9 Input | Output Current mA | Output Standoff Voltage-V (Max) | Active HIGH/LOW | Display Type | Standby Power Dissipation-mW | Logic/Connection Diagram | Package(s) |
|------|-----------------|-----------------------------|---------------------|-------------|-----------------|-------------------------------|----------------------|------------------------------------|-----------------|------------------|---------------------------------|-----------------------------|---------------|
| 5 | 4511B | 7-Seg Latch/ Decoder/Dvr | CMOS | Yes | No | Yes | 25 | T | Н | LED | 0.015 | C111 | 4L,6B, 9B |
| 6 | 4734B | 7-Seg Latch/ Decoder/Dvr | CMOS | Yes | Yes | Yes | 25 | | Н | LED | 0.015 | C114 | 7D,9M |
| 7 | 4543B | 7-Seg Latch/ Decoder/Dvr | CMOS | Yes | No | Yes | - | - | Н | LCD | 0.015 | C112 | 4L,6B, 9B |
| 8 | 54/7441 | 1-of-10 Cold Cathode | TTL | Yes | No | No | 7.0 | 55 | L | Gas Discharge | 145 | D140 | 4L,6B, 9B |
| 9 | 54/7445 | 1-of-10 OC Dvr | TTL | Yes | No | Yes | 80 | 30 | L | Common Anode | 215 | D135 | 4L,7B, 9B |
| 10 | 54/7446 | 7-Seg Decoder/Dvr | TTL | Yes | Yes | No | 40 | 30 | L | Common Anode | 320 | D143 | 4L,7B 9B |
| 11 | 54/7447 | 7-Seg Decoder/Dvr | TTL | Yes | Yes | No | 40 | 15 | L | Common Anode | 320 | D143 | 4L,7B, 9B |
| 12 | 54LS/ 74LS47 | 7-Seg Decoder/Dvr | TTL | Yes | Yes | No | 12 | 15 | L | Common Anode | 35 | D143 | 4L,6B, 9B |
| 13 | 54/7448 | 7-Seg Decoder | TTL | Yes | Yes | No | 8.0 | 5.5 | Н | esigni | 265 | D141 | 4L,7B, 9B. |

^{1.} To be announced

^{2.} OC = open collector, 3S = 3-state

| ISPLAY DRIVERS (Cont'd) | EVIDORIID | INTEDEACE |
|-------------------------|-----------|-----------|
|-------------------------|-----------|-----------|

| Item | DEVICE NO. | Function * | Input Compatibility | BCD Decoder | Ripple Blanking | Blanking Above BCD 9 Input | Output Current mA | Output Standoff Voltage-V (Max) | Active HIGH/LOW | Display Type | Standby Power Dissipation-mW | Logic/Connection Diagram | Package(s) |
|------|-----------------|--------------------------|-----------------------------|-------------|-----------------|-------------------------------|----------------------|------------------------------------|-----------------|-----------------------|---------------------------------|-----------------------------|--------------|
| 1 | 54LS/ 74LS48 | 7-Seg Decoder/Dvr | TTL | Yes | Yes | No | 1.3 | 5.5 | Н | - | 125 | D141 | 4L,6B, 9B |
| 2 | 5449 | 7-Seg Decoder | TTL | Yes | Yes | No | 9.6 | 5.5 | Н | | 165 | D142 | 31 |
| 3 | 54LS/ 74LS49 | 7-Seg Decoder/ Dvr OC | TTL | Yes | Yes | No | 1.3 | 5.5 | Н | selfarQ | 40 | D142 | 31,6A, 9A |
| 4 | 9302 | 1-of-10 OC Dvr | TTL | Yes | No | Yes | 16 | 5.5 | L | _ | 145 | D133 | 4L,6B, 9B |
| 5 | 9307 | 7-Seg Decoder | TTL | Yes | Yes | No | 11 | 5.5 | Н | LED, Com Cathode | 165 | D141 | 4L,7B, 9B |
| 6 | 9315 | 1-of-10 Cold Cathode | TTL | Yes | No | No | 7.0 | 55 | L | Gas Discharge | 145 | D140 | 4L,6B, 9B |
| 7 | 9317B | 7-Seg Decoder/Dvr | TTL | Yes | Yes | Yes | 40 | 20 | L | LED, Com Anode | 220 | D143 | 4L,7B, 9B |
| 8 | 9317C | 7-Seg Decoder/Dvr | TTL | Yes | Yes | Yes | 20 | 30 | L | LED, Com Anode | 220 | D143 | 4L,7B, 9B |
| 9 | 9368 | 7-Seg LED Dvr | TTL | Yes | Yes | No | 20 | 1.7 | Н | LED, Com Cathode | 320 | D144 | 7B,9B |
| 10 | 9370 | 7-Seg LED Dvr | TTL | Yes | Yes | No | 25 | 5.5 | L | LED, Com Anode | 350 | D145 | 6B,9B |
| -11 | 9374 | 7-Seg LED Dvr | TTL, CMOS | Yes | Yes | No | 15 | 10 | L | LED, Com Anode | 175 | D145 | 6B,9B |
| 12 | 9664 | Hex Digit Dvr | MOS, TTL, CMOS | No | No | No | 150 | 20 | L | LED | Neg | 126 | 6A,9A |
| 13 | 9665 | 7-Darlington Dvr | DTL, TTL MOS, CMOS | No | No | No | 350 | 50 | L | LED, Gas Discharge | 0 | 139 | 6B,9B |
| 14 | 9666 | 7-Darlington Dvr | PMOS | No | No | No | 350 | 50 | L | LED, Gas Discharge | 0 | 139 | 6B,9B |
| 15 | 9667 | 7-Darlington Dvr | TTL, CMOS | No | No | No | 350 | 50 | L | LED, Gas Discharge | 0 | 139 | 6B,9B |
| 16 | 9668 | 7-Darlington Dvr | CMOS, PMOS | No | No | No | 350 | 50 | L | LED, Gas Discharge | 0 | 139 | 6B,9B |

^{*}OC = open collector, 3S = 3-state

FAIRCHILD INTERFACE

DISPLAY DRIVERS

DISPLAY DRIVERS (Cont'd)

| Item | DEVICE NO. | Function* | Input Compatibility | BCD Decoder | Ripple Blanking | Blanking Above BCD 9 Input | Output Current mA | Output Standoff Voltage-V (Max) | Active HIGH/LOW | Display Type | Standby Power Dissipation-mW | Logic/Connection Diagram | Package(s) |
|------|------------------|-------------------------|----------------------|-------------|-----------------|-------------------------------|----------------------|------------------------------------|-----------------|-------------------|---------------------------------|-----------------------------|------------------------|
| 1 | 54/ 74141 | 1-of-10 Cold Cathode | TTL | Yes | No | No | 7.0 | 55 | L | Gas Discharge | 80 | D140 | 4L,7B, 9B |
| 2 | 54/ 74145 | 1-of-10 OC Dvr | TTL | Yes | No | Yes | 80 | 15 | L | Common Anode | 215 | D135 | 4L,7B 9B |
| 3 | 54LS/ 74LS247 | 7-Seg Decoder/Dvr | TTL | Yes | Yes | No | 12 | 15 | L | LED, Com Anode | 30 | D143 | 4L,6B, 9B |
| 4 | 54LS/ 74LS248 | 7-Seg Decoder/Dvr | TTL | Yes | Yes | No | 1.3 | 5.5 | Н | i – | 125 | D141 | 4L,6B, 9B |
| 5 | 54LS/ 74LS249 | 7-Seg OC Decoder/Dvr | TTL | Yes | Yes | No | 1.3 | 5.5 | Н | I - | 40 | D141 | 4L,6B, 9B |
| 6 | 75491 | Quad Digit Seg Dvr | MOS, TTL, CMOS | No | No | No | 50 | 20 | L | LED | Neg | 125 | TO-99, 6T,9A, 9T |
| 7 | 75492 | Hex Digit Dvr | MOS, TTL, CMOS | No | No | No | 250 | 20 | L | LED | Neg | 126 | TO-99, 6T,9A, 9T |

*OC = open collector, 3S = 3-state

AUXILIARY DRIVERS

HIGH SPEED BUFFERS AND PERIPHERAL DRIVERS

| Item | DEVICE NO. | Function | Input Compatibility | Gate Function | Circuit Function | Transistor Connection Mode | Output Current mA | Output Voltage | Latchup Voltage mV (Min) | tpd-ns (Typ) | Drivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------|--------------|---------------------|---------------|------------------|-------------------------------|----------------------|----------------|-----------------------------|--------------|---------------------|-----------------------------|----------------|
| 8 | 55/75430 | Dual Drivers | TTL | AND | AND | External | 300 | 15 | 15 | 15 | 2 | 116 | 31,6A,9A |
| 9 | 55/75431 | Dual Drivers | TTL | AND | AND | Internal | 300 | 15 | 15 | 10 | 2 | 117 | TO-99 6T,9T |
| 10 | 55/75432 | Dual Drivers | TTL | NAND | NAND | Internal | 300 | 15 | 15 | 15 | 2 | 118 | TO-99 6T,9T |
| 11 | 55/75433 | Dual Drivers | TTL | OR | OR | Internal | 300 | 15 | 15 | 10 | 2 | 119 | TO-99 6T,9T |

FAIRCHILD INTERFACE

AUXILIARY DRIVERS

HIGH SPEED BUFFERS AND PERIPHERAL DRIVERS (Cont'd)

| Item | DEVICE NO. | Function | Input Compatibility | Gate Function | Circuit Function | Transistor Connection Mode | Output Current mA | Output Voltage | Latchup Voltage mV (Min) | tpd-ns (Typ) | Drivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------|--------------|---------------------|---------------|------------------|-------------------------------|----------------------|----------------|-----------------------------|--------------|---------------------|-----------------------------|----------------|
| 1 | 55/75434 | Dual Drivers | TTL | NOR | NOR | Internal | 300 | 15 | 15 | 13 | 2 | 120 | TO-99 6T,9T |
| 2 | 55/75450 | Dual Drivers | TTL | AND | AND | External | 300 | 30 | 20 | 30 | 2 | 116 | 31,6A,9A |
| 3 | 55/75451 | Dual Drivers | TTL | AND | AND | Internal | 300 | 30 | 20 | 25 | 2 | 117 | TO-99 6T,9T |
| 4 | 55/75452 | Dual Drivers | TTL | AND | NAND | Internal | 300 | 30 | 20 | 35 | 2 | 118 | TO-99 6T,9T |
| 5. | 55/75453 | Dual Drivers | TTL | NOR | OR | Internal | 300 | 30 | 20 | 25 | 2 | 119 | TO-99 6T,9T |
| 6 | 55/75454 | Dual Drivers | TTL | OR | NOR | Internal | 300 | 30 | 20 | 35 | 2 | 120 | TO-99 6T,9T |

HIGH CURRENT, HIGH VOLTAGE BUFFERS AND PERIPHERAL DRIVERS

| Item | DEVICE NO. | Function | Input Compatibility | Gate Function | Circuit Function | Output Current mA (Max) | Output Voltage-V | Latchup Voltage V (Min) | tpd-ns (Typ) | Drivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------|-------------------------------|----------------------|---------------|-------------------|----------------------------|------------------|----------------------------|--------------|---------------------|-----------------------------|---------------|
| 7 | SH2001 | High Current, High Voltage | DTL, TTL | 4-1/ | NAND | 1000 | 50 | _ | 70 | 1 | H5 | TO-100 |
| 8 | SH2002 | High Current, High Voltage | DTL, TTL | - No. 10 | NAND | 1000 | 40 | _ | 70 | 1 | H5 | TO-100 |
| 9 | SH2200 | High Current, High Voltage | DTL, TTL | | NAND | 2000 | 50 | _ | 80 | 1 | H5 | TO-100 |
| 10 | SH2201 | High Current High Voltage | DTL, TTL | 8 | NAND | 2000 | 100 | | | 1 | H5 | TO-100 |
| 11 | SH3011* | Dual Hammer | TTL | Tanastr | Non- Inverting | 5000 | 80 | <u></u> | | 2 | Н8 | 8-pin TO-3 |
| 12 | 9664 | Hex Driver | TTL, MOS, CMOS | lemain | I - CUENII | 150 | 20 | - | 600 | 6 | 126 | 6A,9A |
| 13 | 55/75450 | Dual Drivers | TTL | NAND | | 300 | 30 | 20 | 30 | 2 | 116 | 3I,6A,9A |

^{*}To be announced

FAIRCHILD INTERFACE

AUXILIARY DRIVERS

HIGH CURRENT, HIGH VOLTAGE BUFFERS AND PERIPHERAL DRIVERS (Cont'd)

| Item | DEVICE NO. | Function | Input Compatibility | Gate Function | Circuit Function | Output Current mA (Max) | Output Voltage-V | Latchup Voltage V (Min) | tpd-ns (Typ) | Drivers per Package | Logic/Connection Diagram | Package(s) |
|------|------------|--------------|----------------------|---------------|------------------|----------------------------|------------------|----------------------------|--------------|---------------------|-----------------------------|-------------------|
| 1 | 55/75451 | Dual Drivers | TTL | - | AND | 300 | 30 | 20 | 30 | 2 | 117 | TO-99 6T,9T |
| 2 | 55/75452 | Dual Drivers | TTL | 1- | NAND | 300 | 30 | 20 | 35 | 2 | 118 | TO-99 6T,9T |
| 3 | 55/75453 | Dual Drivers | TTL | | OR | 300 | 30 | 20 | 25 | 2 | 119 | TO-99 6T,9T |
| 4 | 55/75454 | Dual Drivers | TTL | | NOR | 300 | 30 | 20 | 35 | 2 | 120 | TO-99 6T,9T |
| 5 | 55/75460 | Dual Drivers | TTL | NAND | | 300 | 35 | 30 | 35 | 2 | 116 | 31,6A,9A |
| 6 | 55/75461 | Dual Drivers | TTL | - | AND | 300 | 35 | 30 | 35 | 2 | 117 | TO-99 6T,9T |
| 7 | 55/75462 | Dual Drivers | TTL | _ | NAND | 300 | 35 | 30 | 35 | 2 | 118 | TO-99 6T,9T |
| 8 | 55/75463 | Dual Drivers | TTL | - | OR | 300 | 35 | 30 | 35 | 2 | 119 | TO-99 6T,9T |
| 9 | 55/75464 | Dual Drivers | TTL | - | NOR | 300 | 35 | 30 | 35 | 2 | 120 | TO-99 6T,9T |
| 10 | 55/75471 | Dual Drivers | TTL | 9- | AND | 300 | 80 | 55 | 30 | 2 | 117 | TO-99 6T,9T |
| 11 | 55/75472 | Dual Drivers | TTL | NAND | NAND | 300 | 80 | 55 | 45 | 2 | 118 | TO-99 6T,9T |
| 12 | 55/75473 | Dual Drivers | TTL | - | OR | 300 | 80 | 55 | 30 | 2 | 119 | TO-99 6T,9T |
| 13 | 55/75474 | Dual Drivers | TTL | 8,92 | NOR | 300 | 80 | 55 | 40 | 2 | 120 | TO-99 6T,9T |
| 14 | 75491 | Quad Driver | TTL, MOS, CMOS | | 0.0 | 50 | 20 | - | 600 | 4 | 125 | TO-99 6T,9A,9T |
| 15 | 75492 | Hex Driver | TTL, MOS, CMOS | _ | <u> </u> | 250 | 20 | _ | 600 | 6 | 126 | TO-99 6T,9A,9T |

AUAILIANT UNIVERS

MOS, CCD AND CORE MEMORY DRIVERS

| Item | DEVICE NO. | Function | Input Compatibility | Output Current (Capacitive Drive Capability) mA (pF) | tpd-ns (Typ) | Supply Voltage V | Logic/Connection Diagram(s) | Package(s) |
|------|------------|-------------------------|---------------------|--|--------------|------------------------|--------------------------------|-------------|
| 1 | 9643 | Dual TTL to CCD/MOS Dvr | TTL | (300) | 8.0 | +5.0 | 157,58 | 6A,6T,9A,9T |
| 2 | 9644 | Dual TTL to CCD/MOS Dvr | TTL | (300) | 8.0 | +5.0 | 157 | 6T,9T |
| 3 | 9645 | Quad TTL to CCD/MOS Dvr | TTL | (300) | 8.0 | +5.0 | 159 | 6B,9B |
| 4 | 9646 | Dual MOS Clock Dvr | TTL | (1000) | 30 | -22 to +22 | 160,61 | 6A,9A,9T |
| 5 | 55/75325 | Core Memory Dvr | TTL | 600 | 25 | +5.0, +24 | 115 | 4L,7B,9B |
| 6 | 55/75326 | Core Memory Dvr | TTL | 600 | 30 | +5.0 | 168 | 4L,7B,9B |
| 7 | 55/75327 | Core Memory Dvr | TTL | 600 | 35 | +5.0 or +4.5 to +24 | 169 | 4L,7B,9B |

LEVEL TRANSLATORS

LEVEL TRANSLATORS

| Item | DEVICE NO.(1,2) | Function | Supply Voltage V+ (Typ) | Supply Voltage V- (Typ) | VOH-V (Min) | VOL-V (Max) | tpd-ns (Typ) | Power Dissipation mW | Logic/Connection Diagram(s) | Package(s) |
|------|-----------------|-------------------------------|----------------------------|----------------------------|---------------------|--------------------|--------------|----------------------|--------------------------------|--------------|
| 8 | 4049B | Hex Inverting Buffer | +3.0 to +15 | 0.0 | -2.5 ⁽³⁾ | +16(4) | _ | | C12 | 4L, 6B,9B |
| 9 | 4050B | Hex Non-Invert- ing Buffer | +3.0 to +15 | 0.0 | -2.5 ⁽³⁾ | +16 ⁽⁴⁾ | | | C13 | 4L, 6B,9B |
| 10 | 4104B | TTL to Logic HIGH MOS | +3.0 to +15 | 0.0 | +9.95 | +0.05 | 85 | 1.4 | C62 | 4L, 6B,9B |
| 11 | 9109 | HLDTL-TTL Hex | +12 to +20 | 0.0 | ОС | +0.4 | 120 | 380 | G12 | 6A |

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

^{2. 105}XX and 106XX denote military temperature range.

^{3.} Іон-тА

^{4.} loL-mA

FAIRCHILD INTERFACE

LEVEL TRANSLATORS

LEVEL TRANSLATORS (Cont'd)

| Item | DEVICE NO.(1,2) | Function | Supply Voltage V+ (Typ) | Supply Voltage V- (Typ) | VOH-V (Min) | VOL-V (Max) | tpd-ns (Typ) | Power Dissipation mW | Logic/Connection Diagram(s) | Package(s) |
|------|-----------------|---|----------------------------|----------------------------|--|-----------------|--------------|----------------------|--------------------------------|-----------------|
| 1 | 9112 | TTL-HLDTL Hex | +12 to +20 | 0.0 | (+V)-2.0 | +0.4 | 90 | 440 | G12 | 6A |
| 2 | 9595 | Dual ECL-TTL | +5.0 | -5.2 | +2.4 | +0.4 | 6.0 | 375 | E15 | 6B |
| 3 | 9624 | TTL-MOS | +5.0 | 0.0 to -30 | V _{TAP} -1.0 | (-V)+2.0 | 120 | 40 | 19 | 31,6A,9A |
| 4 | 9625 | MOS-TTL Dual | +5.0 | 0.0 to -30 | +3.2 | +0.4 | 70 | 60 | 110 | 31,6A,9A |
| 5 | 9643 | Dual TTL to MOS Driver | +5.0 to +12 | 0.0 | Vcc-0.5 | +0.3 | 8.0 | | 157, 58 | 6A,6T, 9A,9T |
| 6 | 9644 | Dual TTL to MOS Driver | +5.0 to +12 | 0.0 | Vcc-0.5 | +0.3 | 8.0 | - | 157 | 6T,9T |
| 7 | 9645 | Quad TTL to MOS Driver | +5.0 | 0.0 | Vcc-0.5 | +0.3 | 8.0 | F | 159 | 6B,9B |
| 8 | 9646 | Dual MOS Clock Driver | -22 to +22 | 0.0 | Vcc-0.5 | +1.0 | 30 | 8- | 160, 61 | 6A,9A 9T |
| 9 | 11C24 | Dual TTL Voltage Controlled Multivibrator | +5.0 | | +2.5 | +0.5 | 30 | 160 | E19 | 6A |
| 10 | 11C44 | Phase-Freq Detector | +5.0 | | +2.5 | +0.5 | - | 165 | E20 | 6A |
| 11 | 11C58 | ECL Voltage Controlled Multivibrator | +5.0 | -5.2 | -0.96 | -1.62 | - | 260 | E21 | 6B |
| 12 | 10124/ 10524 | TTL-ECL Quad Diff Driver | +5.0 | -5.2 | -0.96 | -1.65 | 3.0 | 265 | E16 | 4L,6B, 9B |
| 13 | 10125/ 10525 | ECL-TTL Quad Buffer | +5.0 | -5.2 | +2.5 | +0.5 | 3.0 | 410 | E17 | 4L,6B 9B |
| 14 | 10177 | ECL to MOS | +5.0 or +6.0 | -5.2 | +3.0 or +4.0 | +0.5 or +0.6 | 6.0 | 430 | E106 | 4L,6B 9B |
| 15 | 95124 | TTL-ECL Quad Diff Driver | +5.0 | -5.2 | -1.05 | -1.595 | 3.0 | 295 | E16 | 6B |
| - | - | | | - | Lancing Control of the Control of th | A | 1 | 1 | 1 | |

In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

^{2. 105}XX and 106XX denote military temperature range.

FAIRCHILD INTERFACE

CONVERTERS

CONVERTERS

| Item | DEVICE NO. | Function | Input Compatibility | Output Current MSB-mA (Max) | Non-Linearity % (Full Scale) | Output Current Settling Time ns | Logic/Connection Diagram | Package(s) |
|------|------------------------------------|---|-----------------------------|--------------------------------|---------------------------------|---------------------------------------|-----------------------------|------------|
| 1 | μ A 0801/ DAC- 08 | 8-Bit High Speed Digital- to-Analog Converter | TTL, CMOS, ECL, HTL, MOS | 2.0 | ±0.1 | 85 | 162 | 6B,9B |
| 2 | μ Α0802 / | 8-Bit Multiplying Digital- to-Analog Converter | TTL, CMOS | 2.0 | ±0.19 | 250 | 163 | 6B,9B |
| 3 | μ Α4151 | Voltage-to-Frequency Converter | TTL, CMOS | - | n - 3 | 11-0 | 164 | 5S,6T,9T |
| 4 | μ Α7151 | Voltage-to-Frequency Converter w/Op Amp | TTL, CMOS | 1- | _ | - | 165 | 6A,9A |
| 5 | 9650 | 4-Bit Current Source | TTL | 2.0 | ±0.1 | - | 112 | 6B |
| 6 | 9706(1) | 8-Channel, 6-Bit Microprocessor, Digital-to-Analog Converter | TTL | = | A — 1 | T - U | 166 | 6A,9A |
| 7 | 9708(1) | 6-Channel, 8-Bit Microprocessor, Analog-to-Digital Converter | TTL SEE OF SE | - | ±0.2 | 75.4— 10.71 | 167 | 6B,9B |
| 8 | 9710(1) | 10-Bit High Speed Digital-to-Analog Converter | TTL, CMOS, ECL | 8.0 | ±0.25 | 200 | - | 6N,9N |
| 9 | 9712(1) | 12-Bit High Speed Digital-to-Analog Converter | TTL, CMOS, ECL | 8.0 | ±0.25 | 300 | 3 <u> </u> | 6N,9N |

AMPLIFIERS

CORE SENSE AMPLIFIERS

| Item | DEVICE NO. ⁽²⁾ | Function | Differential Threshold Voltage Range VREF = 15mV | Common Mode Range | Gate Function | Output Configuration | tpd-ns (Typ) | Logic/Connection Diagram | Package(s) |
|------|---------------------------|----------------|--|-------------------|---------------|----------------------|--------------|-----------------------------|------------|
| 10 | 7524 | Dual Sense Amp | 11 to 19 | ±2.5 | AND | Com Collector | 25 | 130 | 6B,9B |
| 11 | 7525 | Dual Sense Amp | 8.0 to 22 | ±2.5 | AND | Com Collector | 25 | 130 | 6B,9B |
| 12 | 7528 | Dual Sense Amp | 11 to 19 | ±2.5 | AND | Com Collector | 25 | 131 | 6B,9B |
| 13 | 7529 | Dual Sense Amp | 8.0 to 22 | ±2.5 | AND | Com Collector | 25 | 131 | 6B,9B |

^{1.} To be announced

^{2.} In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

AMPLIFIERS

FAIRCHILD INTERFACE

CORE SENSE AMPLIFIERS

| Item | DEVICE NO.* | Function | Differential Threshold Voltage-mV | Common Mode Range V | Gate Function | Output Configuration | tpd-ns (Typ) | Logic/Connection Diagram | Package(s) |
|------|-------------|----------------|--------------------------------------|------------------------|---------------|----------------------|--------------|-----------------------------|------------|
| 1 | 7534 | Dual Sense Amp | 11 to 19 | ±2.5 | NAND | Uncom Collector | 25 | 132 | 6B,9B |
| 2 | 7535 | Dual Sense Amp | 8.0 to 22 | ±2.5 | NAND | Uncom Collector | 25 | 132 | 6B,9B |
| 3 | 75234 | Dual Sense Amp | 11 to 19 | ±2.5 | NAND | Com Collector | 25 | 132 | 6B,9B |
| 4 | 75235 | Dual Sense Amp | 8.0 to 22 | ±2.5 | NAND | Com Collector | 25 | 132 | 6B,9B |

TAPE/DISC PREAMPLIFIERS

| Item | DEVICE NO. | Function | Voltage Gain V/V (Typ) | Bandwidth Unity Gain MHz (Typ) | Input Offset Current μA (Typ) | Input Offset Voltage mV (Typ) | Output Voltage Swing V (Typ) | Logic/Connection Diagram | Package(s) |
|------|---------------|--------------------------|---------------------------|-----------------------------------|----------------------------------|----------------------------------|---------------------------------|-----------------------------|--------------------|
| 5 | μ Α733 | Diff Video Amp | 400 | 120 | 0.4 | 0.6 | 2.5 | I1 | TO-91 5B, 6A,9A |
| 6 | μ Α739 | Dual Low Noise Preamp | 20 | 1.0 | 0.05 | 1.0 | +12,-14 | 148 | 6A,9A |

^{*} In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

ANALOG SWITCHES

| Item | DEVICE NO. | Description | Input Logic | Channel Resistance Ω (Max) | Supply Voltage V | Logic/Connection Diagram | Packages |
|------|------------|----------------------------------|-------------|----------------------------------|---------------------|-----------------------------|----------|
| .1 | SH3002 | SPDT Analog Switch | TTL | 200 | ±12 | H6 | TO-100 |
| 2 | SH3003 | DPST Analog Switch | TTL | 200 | ±12 | H7 | TO-100 |
| 3 | 4016B | Quad Bilateral SPST Switch | CMOS | 1080 | 3.0 to 15 | C63 | 31,6A,9A |
| 4 | 4051B | 8-Chan Analog Multiplexer | CMOS | 340 | 3.0 to 15 | C65 | 4L,6B,9B |
| 5 | 4052B | Dual 4-Chan Analog Multiplexer | CMOS | 340 | 3.0 to 15 | C64 | 4L,6B,9B |
| 6 | 4053B | Triple 2-Chan Analog Multiplexer | CMOS | 340 | 3.0 to 15 | C96 | 4L,6B,9B |
| 7 | 4066B | Quad Bilateral SPST Switch | CMOS | 300 | 3.0 to 15 | C63 | 31,6A,9A |
| 8 | 4067B | 16-Chan Analog Multiplexer | CMOS | 340 | 3.0 to 15 | C97 | 4M,6N,9N |
| 9 | 4741B | 4x4 Crosspoint Switch | CMOS | 340 | 3.0 to 15 | C98 | 4L,6B,9B |

SPECIAL FUNCTIONS

TIMERS AND COUNTERS

| Item | DEVICE NO.* | Function | Time Delay Hrs | Free Running Frequency KHz | Output Compatibility | Output Current mA | Supply Voltage V (Max) | Timing Error | Logic/Connection Diagram | Package(s) |
|------|----------------|----------------------------|-------------------|-------------------------------|----------------------|----------------------|---------------------------|--------------|-----------------------------|------------|
| 10 | μ A555 | Single Timer | 1.0 | 100 | TTL | 200 | 18 | 1.0 | 128 | 5B,9T |
| 11 | μ A 556 | Dual Timer | 1.0 | 100 | TTL | 200 | 18 | 1.0 | 129 | 7B,9B |
| 12 | μ Α2240 | Programmable Timer-Counter | 120 | _ | TTL | 5.0 | 18 | 0.5 | 127 | 7B,9B |

^{*}In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

SPECIAL FUNCTIONS

ARRAYS

| 1 Item | DEVICE NO.* | Function | Balanced Input | Balanced Output | Low Noise | AGC Capability | Multiple Unit | Wideband | Switching Application | VCBO-V | VCEO-V | VEBO-V | IC-mA | Diode Matching mV | Recovery Time-ns | Logic/Connection Diagram | Package(s) |
|--------|-----------------|-------------------------------------|----------------|-----------------|-----------|----------------|---------------|----------|--------------------------|--------|--------|--------|-------|----------------------|------------------|-----------------------------|------------|
| 1 | μ Α726 | Temp Controlled Diff Pair | • | • | • | - | - | - | _ | 40 | 30 | 5.0 | 5.0 | = | - | 140 | 5U |
| 2 | μΑ3018 | Matched Transistor Array | • | • | _ | • | • | • | - | 20 | 15 | 5.0 | 50 | - | - | 141 | 5G |
| 3 | μ Α3018Α | Matched Transistor Array | • | • | | • | • | • | - | 20 | 15 | 5.0 | 50 | - | - | 141 | 5G |
| 4 | μΑ3019 | Diode Array | - | - | | _ | _ | | • | | _ | _ | _ | 1.0 | - | 147 | 5E |
| 5 | μ Α3026 | Dual Diff Amp Transistor Array | - | - | - | - | - | - | - | 20 | 15 | 5.0 | 50 | - | - | 144 | 5G |
| 6 | μΑ3036 | Dual Darlington Transistor Array | • | • | • | - | • | _ | _ | 30 | 15 | 5.0 | 50 | - | - | 142 | 5E |
| 7 | μ Α3039 | Quad Plus Two Diodes | - | - | - | - | - | - | • | - | - | - | - | 1.0 | 1.0 | 146 | 5G |
| 8 | μΑ3045 | Diff Pair Plus Three Transistors | • | • | - | - | • | • | - | 20 | 15 | 5.0 | 50 | | - | 143 | 6A |
| 9 | μΑ3046 | Diff Pair Plus Three Transistors | • | • | _ | - | • | • | - | 20 | 15 | 5.0 | 50 | - | - | 143 | 6A, 9A |
| 10 | μ Α3054 | Dual Diff Amp Transistor Array | - | - | | - | • | - | - | 20 | 15 | 5.0 | 50 | - | _ | 145 | 6A 9A |
| 11 | μΑ3086 | Diff Pair Plus Three Transistors | • | • | | - | • | • | - | 20 | 15 | 5.0 | 50 | 1.0 | _ | 143 | 6A |

^{*}Military grade available.

SPECIAL SUMOTIONS

Salata in a contract of the co

| | | TRANSISTORS | 3 |
|--|----------|---|----|
| | | OPTOELECTRONICS | 4 |
| | | CHARGE-COUPLED DEVICES | 5 |
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| | / | MEMORIES | 10 |
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PRODUCT INDEX

FAIRCHILD FIELD SALES OFFICES, REPRESENTATIVES AND DISTRIBUTORS

DIODES

S

TTL

| Item | Function ⁽¹⁾ | 9000 Series 8 ns/10 mW | Low Power Schottky 54LS/74LS 5 ns/2 mW | Std. TTL 54/74 10 ns/10 mW | High Speed 54H/74H 6 ns/22 mW | High Speed Schottky 54S/74S 3 ns/19 mW | Logic/Connection Diagram (2) | Packages (3) |
|------|----------------------------|------------------------------|---|----------------------------------|-------------------------------------|---|---------------------------------|--------------|
| IAN | D Gates | | | | | | | 1120 1101 |
| 1 | Hex Inverters | 9016 | 54LS/74LS04 | 54/7404 | 54H/74H04 | 54S/74S04 9S04A | D1 | 31,6A,9A |
| 2 | Hex Inverts (OC) | 9017 | 54LS/74LS05 | 54/7405 | 54H/74H05 | 54S/74S05 9S05A | D1 | 31,6A,9A |
| 3 | Hex Inverter (15 V) | _ | - I | 54/7416 | | | D1 | 31,6A,9A |
| 4 | Hex Inverter (30 V) | _ | | 54/7406 | - | | D1 | 31,6A,9A |
| 5 | Hex Schmitt Trigger | _ | 54LS/74LS14 | 54/7414 | _ | | D1 | 31,6A,9A |
| 6 | Quad 2-Input | 9002 | 54LS/74LS00 | 54/7400 | 54H/74H00 | 54S/74S00 | D2 | 31,6A,9A |
| 7 | Quad 2-Input (OC) | 9012 | 54LS/74LS03 | 54/7403 | 54H/74H01 | 54S/74S03 | D2 | 31,6A,9A |
| 8 | Quad 2-Input (OC) | _ | | 54/7401 | | | D3 | 31,6A,9A |
| 9 | Quad 2-Input (12 V) | _ | 54LS/74LS26 | 7426 | | n s á sa | D2 | 31,6A,9A |
| 10 | Quad 2-Input (48 mA) | _ | 54LS/74LS37 | 54/7437 | | | D2 | 31,6A,9A |
| 11 | Quad 2-Input (OC/48 mA) | 87-85 | 74LS38 | 54/7438 | A 5 | 1 | D2 | 31,6A,9A |
| 12 | Quad 2-Input Line Dvr | 96101 | 00673 | 54/7439 | | <u>1</u> 30 F | D3 | 31,6A,9A |
| 13 | Quad 2-Input Schmitt | 1-0 | 74LS132 | 54/74132 | sie 🗕 🛌 | 54S/74S132 | D2 | 31,6A,9A |
| 14 | Triple 3-Input | 9003 | 54LS/74LS10 | 54/7410 | 54H/74H10 | 54S/74S10 | D4 | 31,6A,9A |
| 15 | Triple 3-Input (OC) | 1-11 | HAZ - ISAN | 54/7412 | - L | | D4 | 31,6A,9A |
| 16 | Dual 4-Input | 9004 | 54LS/74LS20 | 54/7420 | 54H/74H20 | 74S20 | D5 | 31,6A,9A |
| 17 | Dual 4-Input Schmitt | - | 54LS/74LS13 | 54/7413 | AND INC. | | D65 | 31,6A,9A |
| 18 | Dual 4-Input (OC) | _ | 54LS/74LS22 | 54/7422 | 54H/74H22 | 74S22 | D5 | 31,6A,9A |
| 19 | Dual 4-Input Buffer | 9009 | 54LS/74LS40 | 54/7440 | 54H/74H40 | 54S/74S40 | D5 | 31,6A,9A |
| 20 | Dual 4-Input Line Dvr | - | _ | | START START | 54S/74S140 | D5 | 31,6A,9A |
| 21 | 8-Input | 9007 | | - | | | D6 | 31,6A |
| 22 | 8-Input | - | 54LS/74LS30 | 54/7430 | 54H/74H30 | 54S/74S30 | D7 | 31,6A,9A |
| 23 | 13-Input | _ | 54LS/74LS133 | | | 54S/74S133 | D8 | 4L,6B,9B |
| 24 | 12-Input (3S) | | | 1 | | 54S/74S134 | D9 | 4L,6B,9B |

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|----|---|----|---|
| -1 | - | _ | ı |
| - | | | ŀ |

| Item | Function ⁽¹⁾ | 9000 Series 8 ns/10 mW | Low Power Schottky 54LS/74LS 5 ns/2 mW | Std. TTL 54/74 10 ns/10 mW | High Speed 54H/74H 6 ns/22 mW | High Speed Schottky 54S/74S 3 ns/19 mW | Logic/Connection Diagram ⁽²⁾ | Packages ⁽³⁾ |
|------|--------------------------|------------------------------|---|----------------------------------|-------------------------------------|---|--|-------------------------|
| NOI | R Gates | | | | | | eo.ls | ED QUANT |
| 1 | Quad 2-Input | 2 20 | 54LS/74LS02 | 54/7402 | 8.48 _000 | 54S/74S02 | D10 | 31,6A,9A |
| 2 | Quad 2-Input | 9015 | | | _ | | D11 | 4L,6B |
| 3 | Triple 3-Input | - Sel | 54LS/74LS27 | 54/7427 | | | D12 | 31,6A,9A |
| 4 | Dual 4-Input w/Strobe | | | 54/7425 | _ | Withm | D13 | 3I,6A,9A |
| 5 | Dual 4-Input (Exp) | | | 54/7423 | L L | | D14 | 4L,6B,9B |
| 6 | Dual 5-Input | - | 54LS/74LS260 | | | | D72 | 31,6A,9A |
| 7 | Quad 2-Input | - 48 | 54LS/74LS28 | | | | D10 | 31,6A,9A |
| 8 | Quad 2-Input (OC) | | 74LS33 | | | Killyii iide | D10 | 6A,9A |
| AN | D Gates | | | | | | | |
| 9 | Hex Buffer (OC/15 V) | - | _ | 54/7417 | | | D15 | 31,6A,9A |
| 10 | Hex Buffer (OC/30 V) | _ | 1 (408) | 54/7407 | | WER THE SHO | D15 | 31,6A,9A |
| 11 | Quad 2-Input | | 54LS/74LS08 | 54/7408 | 54H/74H08 | 54S/74S08 | D16 | 31,6A,9A |
| 12 | Quad 2-Input (OC) | - | 54LS/74LS09 | 54/7409 | Total | 54S/74S09 | D16 | 31,6A,9A |
| 13 | Quad 2-2-3-3 Input | _ | | | - | 9S41 | D17 | 4L,6B,9B |
| 14 | Triple 3-Input | - | 54LS/74LS11 | 54/7411 | 54H/74H11 | 54S/74S11 | D18 | 31,6A,9A |
| 15 | Triple 3-Input (OC) | a <u>—</u> 90 | 54LS/74LS15 | 36] (12 8.1M | £318—800 | 54S/74S15 | D18 | 31,6A,9A |
| 16 | Dual 4-Input | | 54LS/74LS21 | 54/7421 | 54H/74H21 | 10 <u>1</u> 011001 | D19 | 31,6A,9A |
| OR | Gates | or Log | HATSHAR DANK | NU SELEN | POPE SELECT | | me à la | 10 At |
| 17 | Quad 2-Input | - | 54LS/74LS32 | 54/7432 | RIEL I | 54S/74S32 | D20 | 31,6A,9A |
| Exc | lusive OR Gates | | A THUE SEAT | rejere in | 18418 - I | 1010 101 | BILLIAN II | 10 |
| 18 | Quad 2-Input | [_ S#1 | 54LS/74LS86 | 54/7486 | 0.346 6006 | 54S/74S86 | D21 | 3I,6A,9A |
| 19 | Quad 2-Input (OC) | | 54LS/74LS136 | _ | | | D21 | 31,6A,9A |
| 20 | Quad 2-Input OR/NOR | 9014 | | - | Total | - | D22 | 4L,6B |
| 21 | Quad 2-Input OR/NOR | | | EGTS.JAT | 18,000 | 54S/74S135 | D23 | 4L,6B,9B |
| 22 | Quad 2-Input | | 54LS/74LS386 | | | | D94 | 3I,6A,9A |

TTL

| SSI | FUI | NCT | IONS | (Cont'd) |
|-----|-----|-----|------|----------|
|-----|-----|-----|------|----------|

| SSI | FUNCTIONS (Cont | 'd) | - 850 | only and a factor of the second of the secon | | | | | | | | |
|-------|-------------------------|------------------------------|---|--|---|---|--|-------------------------|--|--|--|--|
| Item | Function ⁽¹⁾ | 9000 Series 8 ns/10 mW | Low Power Schottky 54LS/74LS 5 ns/2 mW | Std. TTL 9N 54/74 10 ns/10 mW | High Speed 54H/74H 6 ns/22 mW | High Speed Schottky 54S/74S 3 ns/19 mW | Logic/Connection Diagram ⁽²⁾ | Packages ⁽³⁾ | | | | |
| Exclu | sive NOR Gate | DI | S TX TX TX | LT MLD | 12 48 | Carps] | AL S | 18 11 | | | | |
| 1 | Quad 2-Input (OC) | 8f | 74LS266 | 9386 (8242) | | 1500 | D94 | 31,6A,9A | | | | |
| AND- | OR Gates | | | | 49 | | | | | | | |
| 2 | Dual 4-2 Input | - | - | - | _ | 9S42 | D25 | 4L,6B,9B | | | | |
| 3 | 2-2-2-3 Input (Exp) | at T | e letach | - | 54H/74H52 | 1927 Tab | D26 | 31,6A,9A | | | | |
| AND- | OR-INVERT Gates | 28 | | | 16 | 516 146 | 36.4 | | | | | |
| 4 | Dual 2-2 Input (Exp) | 9005 | e x-x-x-x | 54/7450 | 54H/74H50 | HET THE | D27 | 31,6A,9A | | | | |
| 5 | Dual 2-2 Input | | 54LS/74LS51 | 54/7451 | 54H/74H51 | 54S/74S51 | D28 | 31,6A,9A | | | | |
| 6 | 2-2-2-3 Input (Exp) | 9008 | | 54/7453 | 54H/74H53 | 901-00 | D29 | 31,6A,9A | | | | |
| 7 | 2-2-2-3 Input | | | 54/7454 | 54H/74H54 | 150 - | D30 | 31,6A,9A | | | | |
| 8 | 2-2-3-3 Input | - | 54LS/74LS54 | - | | HACTERS! | D31 | 31,6A,9A | | | | |
| 9 | 2-2-3-4 Input | 03- | or x x | - | | 74S64 | D32 | 6A,9A | | | | |
| 10 | 2-2-3-4 Input (OC) | 4- | | - | an | 74S65 | D32 | 6A,9A | | | | |
| 11 | 4-4 Input (Exp) | at - | an fix—see in | 2 H. K | 54H/74H55 | | D33 | 31,6A,9A | | | | |
| 12 | 4-4 Input | A = 1 | 54LS/74LS55 | J* - m | 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - | | D34 | 31,6A,9A | | | | |
| Gate | Expanders | 86 | 2 8 - 1 | | | STATURE 1 | Tal. | 44 13th | | | | |
| 13 | Triple 3-Input | 28-1 | | Maj = 17 | 54H/74H61 | Seamene . | D35 | 31,6A,9A | | | | |
| 14 | Dual 4-Input | 9006 | | 54/7460 | 54H/74H60 | 13/10/412 | D36 | 31,6A,9A | | | | |
| 15 | 2-2-3-3 AND-OR | 07-1 | 8 N- | | 54H/74H62 | HKY-W | D37 | 31,6A,9A | | | | |
| Buffe | r Gates and Drivers | | | 1 8 | 14 7 7 4 8 | TENY CHE | N. | e G LBI | | | | |
| 16 | Quad Buffer (3S) | _ | 54LS/74LS125 | 54/74125 | 3 L _ 31K | 45.2140 | D66 | 31,6A,9A | | | | |
| 17 | Quad Buffer (3S) | 38_1 | 54LS/74LS126 | 54/74126 | | 978 <u>0</u> 58 (| D67 | 31,6A,9A | | | | |
| 18 | Hex (3S) | 82 | 54LS/74LS365 | 142 | 4 | SAME TAKE | D68 | 4L,6B,9B | | | | |
| 19 | Hex Inverter (3S) | 81-1 | 54LS/74LS366 | T | | MESULES ! | D69 | 4L,6B,9B | | | | |
| 20 | Hex (3S) | 112 | 54LS/74LS367 | 0:1- 3 | A _ N | THE LANG. | D70 | 4L,6B,9B | | | | |
| 21 | Hex Inverter (3S) | 31_1 | 54LS/74LS368 | 11-11 | 4 _ 96 | 141/2/14 | D71 | 4L,6B,9B | | | | |

- 1. OC = open collector, 3S = 3-state.
- The logic symbols located in the Logic/Connection Diagram Section are for the DIP version.
 For specific availability or delivery information on a given package and temperature grade, consult the Fairchild O.E.M. Price List or call the local sales representative or distributor.

TTL SINGLE AND DUAL FLIP-FLOPS

| Item | Function | DEVICE NO. | Inputs | Clock Edge | Direct Set | Direct Clear | Clock Frequency MHz (Typ) | Clock to Output Delay-ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-----------|--------------|---|------------|------------|--------------|------------------------------|-----------------------------------|----------------------------|-----------------------------|------------|
| 1 | Single JK | 9000 | 3J, 3K, JK | 7 | X | X | 20 | 16 | 100 | D50 | 3I, 6A |
| 2 | Single JK | 9001 | 2J, 2K, J, K, JK | 7 | X | X | 50 | 16 | 115 | D51 | 3I, 6A |
| 3 | Single JK | 54H/74H71 | (AOI) (2+2)J,(2+2)K | ~ | X | _ | 30 | 22 | 95 | D52a | 3I, 6A, 9A |
| 4 | Single JK | 54H/74H101 | (AOI) (2+2)J, (2+2)K | ı | X | _ | 50 | 16 | 100 | D52b | 3I, 6A, 9A |
| 5 | Single JK | 54/7472 | 3J, 3K | 7 | X | X | 20 | 25 | 50 | D53a | 3I, 6A, 9A |
| 6 | Single JK | 54H/74H72 | 3J, 3K | 7 | X | X | 30 | 22 | 80 | D53a | 3I, 6A, 9A |
| 7 | Single JK | 54H/74H102 | 3J, 3K | 7 | X | X | 50 | 16 | 100 | D53b | 3I, 6A, 9A |
| 8 | Single JK | 54/7470 | 2J, 2K, \overline{J} , \overline{K} | 7 | X | X | 35 | 27 | 65 | D54 | 3I, 6A, 9A |
| 9 | Dual D | 54/7474 | D | 7 | X | X | 25 | 20 | 85 | D61 | 3I, 6A, 9A |
| 10 | Dual D | 54H/74H74 | D | 7 | X | X | 43 | 13 | 150 | D61 | 3I, 6A, 9A |
| 11 | Dual D | 54\$/74\$74 | D | 7 | X | X | 100 | 7.0 | 150 | D61 | 31, 6A, 9A |
| 12 | Dual D | 54LS/74LS74 | D | 7 | X | X | 50 | 15 | 20 | D61 | 31, 6A, 9A |
| 13 | Dual JK | 9020 | J, K, J, K, JK | T | _ | X | 50 | 16 | 210 | D55 | 4L, 6B |
| 14 | Dual JK | 9022 | J, \overline{K} , JK | 7 | X | X | 15 | 16 | 210 | D56 | 4L, 6B |
| 15 | Dual JK | 54/7473 | J, K | 77 | _ | X | 20 | 25 | 100 | D57a | 3I, 6A, 9A |
| 16 | Dual JK | 54/74107 | J, K | 77 | _ | X | 20 | 25 | 100 | D57a | 3I, 6A, 9A |
| 17 | Dual JK | 54H/74H73 | J, K | 7 | _ | X | 30 | 22 | 160 | D57a | 31, 6A, 9A |
| 18 | Dual JK | 54H/74H103 | J, K | 2 | _ | X | 50 | 16 | 200 | D57b | 3I, 6A, 9A |
| 19 | Dual JK | 54S/74S113 | J, K | 2 | X | - | 125 | 5.0 | 150 | D63 | 3I, 6A, 9A |
| 20 | Dual JK | 54LS/74LS113 | J, K | 2 | X | - | 60 | 12 | 20 | D63 | 3I, 6A, 9A |
| 21 | Dual JK | 54/7476 | J, K | 几 | X | X | 20 | 25 | 100 | D58 | 4L, 6B, 9B |
| 22 | Dual JK | 54H/74H76 | J, K | 7 | X | X | 30 | 22 | 150 | D58 | 4L, 6B, 9B |
| 23 | Dual JK | 54H/74H106 | J, K | 2 | X | X | 50 | 16 | 200 | D58 | 4L, 6B, 9B |
| 24 | Dual JK | 54S/74S112 | J, K | Z | X | X | 125 | 5.0 | 150 | D62 | 4L,6B,9B |
| 25 | Dual JK | 54LS/74LS112 | J, K | 2 | X | X | 60 | 12 | 20 | D62 | 4L,6B,9B |
| 26 | Dual JK | 54H/74H78 | J, K | 7 | X | X | 30 | 22 | 160 | D59a | 31,6A,9A |
| 27 | Dual JK | 54H/74H108 | J, K | 2 | X | X | 50 | 16 | 200 | D59b | 31,6A,9A |

TTL

TTL SINGLE AND DUAL FLIP-FLOPS (Cont'd)

| Item | Function | DEVICE NO. | Inputs | Clock Edge | Direct Set | Direct Clear | Clock Frequency MHz (Typ) | Clock to Output Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|----------|---------------|--------|------------|------------|--------------|------------------------------|-----------------------------------|-------------------------------|-----------------------------|------------|
| 1 | Dual JK | 54\$/74\$114 | J,K | Z | X | X | 125 | 5.0 | 150 | D64 | 31,6A,9A |
| 2 | Dual JK | 54LS/74LS114 | J,K | 7 | X | X | 60 | 12 | 20 | D64 | 31,6A,9A |
| 3 | Dual JK | 9024,54/74109 | J,K | 7 | X | X | 25 | 22 | 90 | D60 | 4L,6B,9B |
| 4 | Dual JK | 54\$/74\$109 | J,K | 7 | X | X | 100 | 7.0 | 160 | D60 | 4L,6B,9B |
| 5 | Dual JK | 54LS/74LS109 | J,K | ٦ | X | X | 50 | 15 | 20 | D60 | 4L,6B,9B |
| 6 | Dual JK | 54LS/74LS76 | J,K | Z | X | X | 60 | 12 | 20 | D58 | 4L,6B,9B |
| 7 | Dual JK | 54LS/74LS107 | J,K | 2 | - | X | 60 | 12 | 20 | D57a | 31,6A,9A |
| 8 | Dual JK | 54LS/74LS78 | J,K | 7 | X | X | 45 | 16 | 20 | D82 | 31,6A,9A |

LATCHES/FLIP-FLOPS

| Item | Function | DEVICE NO. | Data Inputs | Common Clear | Enable/Clock Inputs (Level) | Required Enable/Clock Pulse Width-ns (Typ) | Enable/Clock to Q Delay-ns (Typ) | Data to Q Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|----------------|--------------|------------------------------------|--------------|--------------------------------|---|-------------------------------------|-----------------------------|-------------------------------|-----------------------------|------------|
| 9 | 4-Bit RS Latch | 9314 | $4x(\overline{R}_1\overline{S}_1)$ | L | 1(L) | 12 | 18 | 18 | 175 | D146 | 4L,7B,9B |
| 10 | 4-Bit RS Latch | 93L14 | $4x(\overline{R}_1\overline{S}_1)$ | L | 1(L) | 30 | 51 | 45 | 50 | D146 | 4L,7B,9B |
| 11 | 4-Bit RS Latch | 54/74279 | 4x(RS) | _ | - | _ | _ | 14 | 90 | D147 | 4L,6B,9B |
| 12 | 4-Bit RS Latch | 54LS/74LS279 | 4x(RS) | _ | - | _ | _ | 14 | 19 | D147 | 4L,6B,9B |
| 13 | 4-Bit D Latch | 9314 | 4xD | L | 1(L) | 12 | 18 | 18 | 175 | D146 | 4L,7B,9B |
| 14 | 4-Bit D Latch | 93L14 | 4xD | L | 1(L) | 30 | 51 | 45 | 50 | D146 | 4L,7B,9B |
| 15 | 4-Bit D Latch | 54/7475 | 4xD | _ | 2(H) | 20 | 16 | 16 | 160 | D148 | 4L,6B,9B |
| 16 | 4-Bit D Latch | 5477 | 4xD | _ | 2(H) | 20 | 16 | 16 | 160 | D149 | 31 |
| 17 | 4-Bit D Latch | 54/74196 | 4xD | L | 1(L) | 20 | 23 | 20 | 240 | D125 | 31,6A,9A |
| 18 | 4-Bit D Latch | 54LS/74LS196 | 4xD | L | 1(L) | 20 | 28 | 24 | 60 | D125 | 31,6A,9A |
| 19 | 4-Bit D Latch | 54/74197 | 4xD | L | 1(L) | 20 | 23 | 20 | 240 | D125 | 31,6A,9A |
| 20 | 4-Bit D Latch | 54LS/74LS197 | 4xD | L | 1(L) | 20 | 28 | 24 | 60 | D125 | 31,6A,9A |
| 21 | 4-Bit D Latch | 54LS/74LS75 | 4xD | - | 2(H) | 20 | 10 | 10 | 32 | D148 | 4L,6B,9B |
| 22 | 4-Bit D Latch | 54LS/74LS77 | 4xD | _ | 2(H) | 20 | 10 | 10 | 32 | D149 | 4L,6B,9B |

TTL

LATCHES/FLIP-FLOPS (Cont'd)

| Item | Function ⁽¹⁾ | DEVICE NO. | Data Inputs | Common Clear | Enable/Clock Inputs (Level) | Required Enable/Clock Pulse Width-ns (Typ) | Enable/Clock to Q Delay-ns (Typ) | Data to Q Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-------------------------|------------------------------|-------------|--------------|--------------------------------|---|-------------------------------------|-----------------------------|-------------------------------|-----------------------------|------------|
| 1 | 4-Bit D Latch | 54LS/74LS375 | 4xD | _ | 2(H) | 20 | 10 | 10 | 32 | D190 | 4L,6B,9B |
| 2 | 4-Bit D Flip-Flop | 54/74175 | 4xD | L | 1(」) | 20 | 20 | | 150 | D150 | 4L,6B,9B |
| 3 | 4-Bit D Flip-Flop | 54LS/74LS175 | 4xD | L | 1(上) | 20 | 21 | | 55 | D150 | 4L,6B,9B |
| 4 | 4-Bit D Flip-Flop | 54S/74S175 | 4xD | L | 1(」「) | 7.0 | 10 | - | 300 | D150 | 4L,6B,9B |
| 5 | 4-Bit D Flip-Flop | 54/74298 | 4x2 | | 1(乙) | 20 | 20 | - | 195 | D156 | 4L,7B,9B |
| 6 | 4-Bit D Flip-Flop | 54LS/74LS298 | 4x2 | | 1(7) | 20 | 20 | _ | 65 | D156 | 4L,6B,9B |
| 7 | Dual 4-Bit D Latch | 9308 | 8xD | 2xL | 2x2 AND | 15 | 19 | 12 | 300 | D151 | 4M,6N,9N |
| 8 | Dual 4-Bit D Latch | 93L08 | 8xD | 2xL | 2x2 AND | 30 | 32 | 32 | 100 | D151 | 4M,6N,9N |
| 9 | Dual 4-Bit D Latch | 54/74116 | 8xD | 2xL | 2x2 AND | 15 | 19 | 12 | 300 | D151 | 4M,6N,9N |
| 10 | Dual 4-Bit Addr. Latch | 54LS/74LS256 | 8xD | X | 2(L) | 12 | 20 | 20 | 100 | D87 | 4L,6B,9B |
| 11 | 6-Bit D Flip-Flop | 54/74174 | 6 | L | 1(」) | 20 | 20 | _ | 225 | D152 | 4L,6B,9B |
| 12 | 6-Bit D Flip-Flop | 54S/74S174 | 6 | L | 1(」) | 7.0 | 10 | | 450 | D152 | 4L,6B,9B |
| 13 | 6-Bit D Flip-Flop | 54LS/74LS174 | 6 | L | 1() | 20 | 21 | | 80 | D152 | 4L,6B,9B |
| 14 | 8-Bit D Flip-Flop(3S) | 54LS ⁽²⁾ /74LS374 | 8xD | | 1(」) | 10 | 23 | 23 | 135 | D86 | 9Z |
| 15 | 8-Bit D Latch | 54LS ⁽²⁾ /74LS373 | 8xD | _ | 1(H) | 15 | 24 | 16 | 120 | D85 | 9Z |
| 16 | 8-Bit D Latch | 54LS ⁽²⁾ /74LS573 | 8xD | _ | 1(L) | _ | 70 | | | D179 | 9Z |
| 17 | 8-Bit Addr Latch | 9334 , | 1xD | L | 1(L) 3 addr bits | 11 | 18 | 28 | 280 | D134 | 4L,7B,9B |
| 18 | 8-Bit Addr Latch | 93L34 | 1xD | L | 1(L) 3 addr bits | 18 | 30 | 37 | 70 | D134 | 4L,6B,9B |
| 19 | 8-Bit Addr Latch | 54LS/74LS259 | 1xD | L | 1(L) 3 addr bits | 11 | 18 | 28 | 70 | D134 | 4L,6B,9B |
| 20 | 8-Bit Multi Port Reg | 9338 | 1xD | _ | 1(L) 9 addr bits | 7.0 | 24 | 35 | 425 | D153 | 4L,7B,9B |
| 21 | 8-Bit Multi Port Reg | 93L38 | 1xD | _ | 1(L) 9 addr bits | 19 | 38 | 52 | 105 | D153 | 4L,7B,9B |
| 22 | 4x4 Register File | 54/74170 | 4xD | | 2 | 25 | | 25 | 635 | D154 | 4L,7B,9B |
| 23 | 4x4 Register File | 54LS/74LS170 | 4xD | _ | 2 | 25 | _ | 26 | 125 | D154 | 4L,7B,9B |
| 24 | 4x4 Register File(3S) | 54LS/74LS670 | 4xD | _ | 2 | 25 | _ | 24 | 150 | D154 | 4L,7B,9B |

^{1. 3}S = 3-state 2. To be announced

TTL

MULTIPLEXERS

| Item | Function | DEVICE NO. | Enable Inputs | True Output ⁽¹⁾ | Complement Output | Select Delay ns (Typ) | Enable Delay ns (Typ) | Data Delay ns (Typ) | Power Dissipation mW (Typ) | Fan-Out (UL) (2) | Logic/Connection Diagram | Package(s) |
|------|--------------|--------------|---------------------------|----------------------------|-------------------|--------------------------|--------------------------|------------------------|-------------------------------|------------------|-----------------------------|------------|
| 1 | Quad 2-Input | 9322 | 1 | X | - | 18 | 14 | 9.0 | 150 | 10 | D157 | 4L,7B,9B |
| 2 | Quad 2-Input | 93L22 | 1 | X | _ | 23 | 20 | 14 | 45 | 5.0 | D157 | 4L,7B,9B |
| 3 | Quad 2-Input | 54/74157 | 1 | X | 1 | 18 | 14 | 9.0 | 150 | 10 | D157 | 4L,7B,9B |
| 4 | Quad 2-Input | 54LS/74LS157 | 1 | X | | 18 | 14 | 9.0 | 49 | 5.0 | D157 | 4L,6B,9B |
| 5 | Quad 2-Input | 548/748157 | 1 | X | 22 | 10 | 8.0 | 5.0 | 250 | 12.5 | D157 | 4L,6B,9B |
| 6 | Quad 2-Input | 54LS/74LS158 | 1 | | X | 16 | 12 | 7.0 | 24 | 5.0 | D157 | 4L,6B,9B |
| 7 | Quad 2-Input | 54S/74S158 | 1 | _ | X | 8.0 | 7.0 | 4.0 | 195 | 12.5 | D157 | 4L,6B,9B |
| 8 | Quad 2-Input | 54LS/74LS257 | 1 | 3S | | 14 | 16 | 12 | 50 | 5.0 | D157 | 4L,6B,9B |
| 9 | Quad 2-Input | 54S/74S257 | 1 | 3S | _ | 10 | 13 | 5.0 | 320 | 12.5 | D157 | 4L,6B,9B |
| 10 | Quad 2-Input | 54LS/74LS258 | 1 | 11- | 3S | 12 | 16 | 10 | 35 | 5.0 | D157 | 4L,6B,9B |
| 11 | Quad 2-Input | 54S/74S258 | 1 | 11- | 3S | 8.0 | 13 | 4.0 | 280 | 12.5 | D157 | 4L,6B,9B |
| 12 | Quad 2-Input | 54/74298 | Clocked (edge-trigger) | X Latched | _ | 1000 | 20 | _ | 195 | 10 | D156 | 4L,7B,9B |
| 13 | Quad 2-Input | 54LS/74LS298 | Clocked (edge-trigger) | X Latched | - | - | 20 | _ | 65 | 5.0 | D156 | 4L,6B,9B |
| 14 | Dual 4-Input | 9309 | | X | X | 15 | _ | 10 | 150 | 10 | D155 | 4L,6B,9B |
| 15 | Dual 4-Input | 93L09 | | X | X | 45 | - | 30 | 38 | 5.0 | D155 | 4L,6B,9B |
| 16 | Dual 4-Input | 54/74153 | 2 | X | 70 | 22 | 19 | 15 | 180 | 10 | D158 | 4L,6B,9B |
| 17 | Dual 4-Input | 54LS/74LS153 | 2 | X | - | 18 | 16 | 10 | 31 | 5.0 | D158 | 4L,6B,9B |
| 18 | Dual 4-Input | 54S/74S153 | 2 | X | T | 12 | 10 | 6.0 | 225 | 12.5 | D158 | 4L,6B,9B |
| 19 | Dual 4-Input | 54LS/74LS253 | 2 | 3S | - | 18 | 16 | 10 | 43 | 5.0 | D158 | 4L,6B,9B |
| 20 | Dual 4-Input | 54\$/74\$253 | 2 | 3S | - 8 | 12 | 13 | 6.0 | 325 | 12.5 | D158 | 4L,6B,9B |
| 21 | Dual 4-Input | 54LS/74LS352 | 2 | | X | 17 | 15 | 8.0 | 31 | 5.0 | D180 | 4L,6B,9B |
| 22 | Dual 4-Input | 54LS/74LS353 | 2 | 3S | 3S | 20 | 12 | 10 | 42 | 5.0 | D181 | 4L,6B,9B |
| 23 | 8-Input | 9312 | 1 | X | X | 18 | 15 | 10 | 135 | 10 | D159 | 4L,7B,9B |
| 24 | 8-Input | 93L12 | ac 1 x | X | X | 54 | 45 | 30 | 36 | 5.0 | D159 | 4L,7B,9B |
| 25 | 8-Input | 93S12 | 68 1b8 | X | X | 12 | 10 | 7.0 | 190 | 12.5 | D159 | 4L,7B,9B |
| 26 | 8-Input | 9313 | 1.0 | X | ОС | 25 | 22 | 18 | 135 | 10 | D159 | 4L,7B,9B |

- 1. OC = open collector, 3S = 3-state
- 2. Unit Load (UL) = $40 \mu A HIGH/1.6 mA LOW$

MULTIPLEXERS (Cont'd)

| Item | Function | DEVICE NO. | Enable Inputs | True Output (1) | Complement Output | Select Delay ns (Typ) | Enable Delay ns (Typ) | Data Delay ns (Typ) | Power Dissipation mW (Typ) | Fan-Out (UL) ⁽²⁾ | Logic/Connection Diagram | Packages(s) |
|------|----------|--------------|---------------|-----------------|-------------------|--------------------------|--------------------------|------------------------|-------------------------------|-----------------------------|-----------------------------|-------------|
| 1 | 8-Input | 54/74151A | 1 | X | X | 25 | 21 | 16 | 145 | 10 | D160 | 4L,7B,9B |
| 2 | 8-Input | 54LS/74LS151 | 1 | X | X | 28 | 25 | 18 | 30 | 5.0 | D160 | 4L,6B,9B |
| 3 | 8-Input | 54S/74S151 | 1 | X | X | 12 | 11 | 8.0 | 225 | 12.5 | D160 | 4L,6B,9B |
| 4 | 8-Input | 54LS/74LS251 | 1 | 3S | 3S | 29 | 21 | 18 | 33 | 5.0 | D160 | 4L,6B,9B |
| 5 | 8-Input | 54S/74S251 | 1 | 3S | 3S | 12 | 12 | 8.0 | 275 | 12.5 | D160 | 4L,6B,9B |
| 6 | 8-Input | 74152A | 1 | - | X | 18 | _ | 8.0 | 130 | 10 | D161 | 7A,9A |
| 7 | 8-Input | 54LS/74LS152 | 0.0 | - | X | 22 | _ | 11 | 28 | 5.0 | D161 | 4L,6B,9B |
| 8 | 16-Input | 54/74150 | 1 | _ | X | 22 | 21 | 13 | 200 | 10 | D162 | 4M,6N,9N |

DECODERS/DEMULTIPLEXERS

| Item | Function | DEVICE NO. | Address Inputs | Active LOW Enable | Active LOW Outputs | Open Collector Output Voltage | Address Delay ns (Typ) | Enable Delay ns (Typ) | Power Dissipation mW (Typ) | Fan-Out (UL) (2) | Logic/Connection Diagram | Package(s) |
|------|-------------|--------------|----------------|-------------------|--------------------|----------------------------------|---------------------------|--------------------------|-------------------------------|------------------|-----------------------------|------------|
| 9 | Dual 1-of-4 | 9321 | 2+2 | 1+1 | 4+4 | _ | 14 | 12 | 150 | 10 | D131 | 4L,6B,9B |
| 10 | Dual 1-of-4 | 93L21 | 2+2 | 1+1 | 4+4 | _ | 43 | 34 | 45 | 5.0 | D131 | 4L,6B,9B |
| 11 | Dual 1-of-4 | 54LS/74LS139 | 2+2 | 1+1 | 4+4 | _ | 22 | 19 | 34 | 5.0 | D131 | 4L,6B,9B |
| 12 | Dual 1-of-4 | 54S/74S139 | 2+2 | 1+1 | 4+4 | | 7.5 | 6.0 | 300 | 12.5 | D131 | 4L,6B,9B |
| 13 | Dual 1-of-4 | 54/74155 | 2 | 2+2 | 4+4 | - | 21 | 18 | 125 | 10 | D132 | 4L,6B,9B |
| 14 | Dual 1-of-4 | 54LS/74LS155 | 2 | 2+2 | 4+4 | _ | 18 | 15 | 30 | 5.0 | D132 | 4L,6B,9B |
| 15 | Dual 1-of-4 | 54/74156 | 2 | 2+2 | 4+4 | 5.5 | 23 | 20 | 125 | 10 | D132 | 4L,6B,9B |
| 16 | Dual 1-of-4 | 54LS/74LS156 | 2 | 2+2 | 4+4 | 5.5 | 33 | 26 | 31 | 5.0 | D132 | 4L,6B,9B |
| 17 | 1-of-8 | 9301 | 3 | 1 | 8 | _ | 22 | 22 | 145 | 10 | D133 | 4L,6B,9B |
| 18 | 1-of-8 | 93L01 | 3 | 1 | 8 | - | 36 | 36 | 45 | 5.0 | D133 | 4L,6B,9B |
| 19 | 1-of-8 | 9302 | 3 | 1 | 8 | 5.5 | 30 | 30 | 145 | 10 | D133 | 4L,6B,9B |
| 20 | 1-of-8 | 9334 | 3 | 1 | 8 | _ | 30 | 19 | 280 | 6.0 | D134 | 4L,7B,9B |

OC = open collector, 3S = 3-state
 Unit Load (UL) = 40µA HIGH/1.6mA LOW

TTL

| Item | Function | DEVICE NO. | Address Inputs | Active LOW Enable | Active LOW Outputs | Open Collector Output Voltage | Address Delay ns (Typ) | Enable Delay ns (Typ) | Power Dissipation mW (Typ) | Fan-Out (UL)* | Logic/Connection Diagram | Package(s) |
|------|--|--------------|-------------------------|-------------------|--------------------|-------------------------------|---------------------------|--------------------------|-------------------------------|---------------|-----------------------------|------------|
| 1 | 1-of-8 | 93L34 | 3 | 1 | 8 | _ | 46 | 30 | 70 | 5.0 | D134 | 4L,7B,9B |
| 2 | 1-of-8 | 54LS/74LS259 | 3 | 1 | 8 | - | 30 | 19 | 60 | 5.0 | D134 | 4L,6B,9B |
| 3 | 1-of-8 | 54/7445 | 3 | 1 | 8 | 30 | 40 | 40 | 215 | 80mA | D135 | 4L,7B,9B |
| 4 | 1-of-8 | 54/7442 | 3 | 1 | 8 | _ | 26 | 26 | 140 | 10 | D135 | 4L,6B,9B |
| 5 | 1-of-8 | 54LS/74LS42 | 3 | 1 | 8 | - | 17 | 17 | 35 | 5.0 | D135 | 4L,6B,9B |
| 6 | 1-of-8 | 54LS/74LS138 | 3 | 3 | 8 | S - | 22 | 21 | 34 | 5.0 | D136 | 4L,6B,9B |
| 7 | 1-of-8 | 54S/74S138 | 3 | 3 | 8 | - | 8.0 | 7.0 | 225 | 12.5 | D136 | 4L,6B,9B |
| 8 | 1-of-8 | 54/74145 | 3 | 1 | 8 | 15 | 40 | 40 | 215 | 80mA | D135 | 4L,7B,9B |
| 9 | 1-of-8 w/ Input Latches | 93S137 | 3 | 2 | 8 | 1 | 14 | 8.0 | 310 | 12.5 | D137 | 4L,6B,9B |
| 10 | 1-of-10 | 9301 | 4 (BCD) | _ | 10 | _ | 22 | - | 145 | 10 | D133 | 4L,7B,9B |
| 11 | 1-of-10 | 93L01 | 4 (BCD) | | 10 | | 36 | | 45 | 5.0 | D133 | 4L,7B,9B |
| 12 | 1-of-10 | 9302 | 4 (BCD) | | 10 | 5.5 | 30 | 1 | 145 | 10 | D133 | 4L,7B,9B |
| 13 | 1-of-10 | 54/7445 | 4 (BCD) | | 10 | 30 | 40 | - | 215 | 80mA | D135 | 4L,7B,9B |
| 14 | 1-of-10 | 54/7442 | 4 (BCD) | | 10 | 6 - | 26 | 25/12 | 140 | 10 | D135 | 4L,6B,9B |
| 15 | 1-of-10 | 54LS/74LS42 | 4 (BCD) | _ | 10 | _ | 17 | _ | 35 | 5.0 | D135 | 4L,6B,9B |
| 16 | 1-of-10 | 54/7443 | 4 Excess-3 | _ | 10 | - | 26 | _ | 140 | 10 | D135 | 4L,6B,9B |
| 17 | 1-of-10 | 54/7444 | 4 Excess-3 (Gray) | - | 10 | - | 26 | - | 140 | 10 | D135 | 4L,6B,9B |
| 18 | 1-of-10 | 54/74145 | 4 (BCD) | | 10 | 15 | 40 | _ | 215 | 80mA | D135 | 4L,7B,9B |
| 9 | 1-of-16 | 9311 | 4 | 2 | 16 | | 21 | 17 | 175 | 10 | D138 | 4M,6N,9N |
| 20 | 1-of-16 | 93L11 | 4 | 2 | 16 | _ | 70 | 48 | 58 | 5.0 | D138 | 4M,6N,9N |
| 21 | 1-of-16 | 54/74154 | 4 | 2 | 16 | - | 22 | 19 | 180 | 10 | D138 | 4M,6N,9N |
| 22 | 1-of-10 Sequential (Decade Sequencer) | 9319 | | Clock | 10 | 4 | | 25 | 300 | 10 | D139 | 4L,7B,9B |
| 23 | 1-of-10 Sequential (Decade Sequencer) | 9320 | | Clock | 10 | 3K Pull- up | 888 | 25 | 310 | 10 | D139 | 4L,7B,9B |

^{*}Unit Load (UL) = $40\mu A$ HIGH/1.6mA LOW

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| | | | | | | | | |

| Item | Function | DEVICE NO. | No. of Bits | Serial Entry | Parallel Entry No. of Bits * | Clock Edge | Max Clock Freq MHz (Typ) | Clock to Output Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|--|--------------|-------------|--------------|---------------------------------|------------|-----------------------------|-----------------------------------|-------------------------------|-----------------------------|------------|
| 1 | Parallel-in/Parallel-out Shift Right | 9300 | 4 | J,K | 48 | 7 | 38 | 16 | 300 | D163 | 4L,7B,9B |
| 2 | Parallel-in/Parallel-out Shift Right | 93H00 | 4 | J,K | 48 | 7 | 55 | 12 | 325 | D163 | 4L,7B,9B |
| 3 | Parallel-in/Parallel-out Shift Right | 93L00 | 4 | J,K | 48 | | 17 | 28 | 75 | D163 | 4L,7B,9B |
| 4 | Parallel-in/Parallel-out Shift Right | 93S00 | 4 | J,K | 48 | 7 | 105 | 10 | 350 | D163 | 4L,7B,9B |
| 5 | Parallel-in/Parallel-out Shift Right | 93H72 | 4 | D | 48 | 7 | 60 | 12 | 475 | D164 | 4L,7B,9B |
| 6 | Parallel-in/Parallel-out Shift Right | 54/7494 | 4 | D | 48 | 7 | 20 | 25 | 175 | D165 | 4L,7B,9B |
| 7 | Parallel-in/Parallel-out Shift Right | 54/7495 | 4 | D | 48 | 2 | 36 | 20 | 195 | D166 | 3I,7A,9A |
| 8 | Parallel-in/Parallel-out Shift Right | 54LS/74LS95 | 4 | D | 48 | 2 | 36 | 20 | 65 | D166 | 31,6A,9A |
| 9 | Parallel-in/Parallel-out Shift Right | 54/7496 | 5 | D | 5A | 7 | 10 | 25 | 240 | D167 | 4L,7B,9B |
| 10 | Parallel-in/Parallel-out Shift Right | 54/74178 | 4 | D | 4A | 2 | 39 | 23 | 230 | D168 | 31,7A,9A |
| 11 | Parallel-in/Parallel-out Shift Right | 54/74179 | 4 | D | 4A | ı | 39 | 23 | 230 | D169 | 4L,7B,9B |
| 12 | Parallel-in/Parallel-out Shift Right | 54/74195 | 4 | J,K | 48 | 5 | 39 | 17 | 195 | D163 | 4L,7B,9B |
| 13 | Parallel-in/Parallel-out Shift Right | 54LS/74LS195 | 4 | J,K | 48 | 5 | 39 | 17 | 70 | D163 | 4L,6B,9B |
| 14 | Parallel-in/Parallel-out Shift Right | 54/74199 | 8 | J,K | 88 | 7 | 35 | 20 | 360 | D170 | 4M,6N,9N |
| 15 | Parallel-in/Parallel-out Shift Right | 54LS/74LS295 | 4 | D | 48 | | 28 | 40 | 75 | D171 | 31,6A,9A |
| 16 | Parallel-in/Parallel-out Bi-Directional | 54/74194 | 4 | DR, DL | 48 | J | 36 | 16 | 195 | D172 | 4L,7B,9B |
| 17 | Parallel-in/Parallel-out Bi-Directional | 54S/74S194 | 4 | DR, DL | 48 | | 105 | 10 | 425 | D172 | 4L,7B,9B |

^{*}A = asynchronous, S = synchronous

TTL

REGISTERS (Cont'd)

| Item | Function | DEVICE NO. | No. of Bits | Serial Entry | Parallel Entry No. of Bits (1) | Clock Edge | Max Clock Freq MHz (Typ) | Clock to Output Delay-ns (Typ) | Power Dissipation. mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|--|------------------------------|-------------|--------------|-----------------------------------|------------|-----------------------------|-----------------------------------|--------------------------------|-----------------------------|------------|
| 1 | Parallel-in/Parallel-out Bi-Directional | 54LS/74LS194 | 4 | DR, DL | 48 | | 36 | 16 | 75 | D172 | 4L,6B,9B |
| 2 | Parallel-in/Parallel-out Bi-Directional | 54/74198 | 8 | DR, DL | 88 | | 35 | 19 | 360 | D173 | 4M,6N,9N |
| 3 | Parallel-in/Parallel-out Bi-Directional | 54LS ⁽²⁾ /74LS299 | 8 | D | 48 | 7 | 40 | 15 | 175 | D88 | 9Z |
| 4 | Parallel-in/Parallel-out Bi-Directional | 54LS ⁽²⁾ /74LS323 | 8 | D | 88 | 5 | 40 | 15 | 175 | D89 | 9Z |
| 5 | Serial-in/Parallel-out | 54/74164 | 8 | 2D | | T | 36 | 19 | 185 | D174 | 31,7A,9A |
| 6 | Serial-in/Parallel-out | 54LS/74LS164 | 8 | 2D | | 丁 | 18 | 50 | 95 | D174 | 3I,6A,9A |
| 7 | Parallel-in/Parallel-out | 54/74174 | 6 | | 6S | | 35 | 21 | 230 | D152 | 4L,7B,9B |
| 8 | Parallel-in/Parallel-out | 54S/74S174 | 6 | - | 6S | | 110 | 11 | 450 | D152 | 4L,7B,9B |
| 9 | Parallel-in/Parallel-out | 54LS/74LS174 | 6 | | 6S | | 40 | 21 | 65 | D152 | 4L,6B,9B |
| 10 | Parallel-in/Parallel-out | 54/74175 | 4 | 5 1 | 48 | | 35 | 21 | 150 | D150 | 4L,7B,9B |
| 11 | Parallel-in/Parallel-out | 54S/74S175 | 4 | | 48 | | 110 | 11 | 300 | D150 | 4L,7B,9B |
| 12 | Parallel-in/Parallel-out | 54LS/74LS175 | 4 | 10- | 48 | | 40 | 21 | 45 | D150 | 4L,6B,9B |
| 13 | Parallel-in/Parallel-out | 54/74298 | 4 | _ | 2D Mux | 7 | 30 | 21 | 195 | D156 | 4L,7B,9B |
| 14 | Parallel-in/Parallel-out | 54LS/74LS298 | 4 | _ | 2D Mux | 乙 | 30 | 21 | 65 | D156 | 4L,6B,9B |
| 15 | Parallel-in/Parallel-out | 54LS ⁽²⁾ /74LS395 | 4 | D | 48 | 7 | 35 | 21 | 75 | D196 | 4L,7B,9B |
| 16 | Parallel-in/Parallel-out | 54LS ⁽²⁾ /74LS273 | 8 | _ | 88 | 7 | 45 | 18 | 85 | D90 | 9Z |
| 17 | Parallel-in/Parallel-out | 54LS ⁽²⁾ /74LS374 | 8 | _ | 88 | 工 | 55 | 20 | 135 | D86 | 9Z |
| 18 | Parallel-in/Parallel-out | 54LS ⁽²⁾ /74LS377 | 8 | - | 88 | 7 | 45 | 18 | 85 | D91 | 9Z |
| 19 | Parallel-in/Parallel-out | 54LS/74LS378 | 6 | _ | 6S | | 45 | 20 | 65 | D92 | 4L,6B,9B |
| 20 | Parallel-in/Parallel-out | 54LS/74LS379 | 4 | _ | 48 | 工 | 45 | 15 | 75 | D93 | 4L,6B,9B |
| 21 | Parallel-in/Parallel-out | 54LS ⁽²⁾ /74LS398 | 4 | | 2D Mux | J | 35 | 20 | 37 | D95 | 9Z |

^{1.} A = asynchronous, S = synchronous

^{2.} To be announced

REGISTERS (Cont'd)

| Item | Function | DEVICE NO. | No. of Bits | Serial Entry | Parallel Entry No. of Bits ⁽¹⁾ | Clock Edge | Max Clock Freq MHz (Typ) | Clock to Output Delay-ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|---|------------------------------|-------------|--------------|--|------------|-----------------------------|-----------------------------------|-------------------------------|-----------------------------|------------|
| 1 | Parallel-in/Parallel-out | 54LS/74LS399 | 4 | | 2D Mux | 7 | 35 | 20 | 37 | D96 | 4L,6B,9B |
| 2 | Parallel-in/Parallel-out | 54LS ⁽³⁾ /74LS574 | 8 | _ | 88 | 7 | 55 | 20 | 135 | D97 | 9Z |
| 3 | Parallel-in/Serial-out | 54/7494 | 4 | D | 48 | 7 | 10 | 25 | 175 | D165 | 4L,7B,9B |
| 4 | Parallel-in/Serial-out | 54/74165 | 8 | D | .8A | 7 | 26 | 19 | 210 | D175 | 4L,7B,9B |
| 5 | Parallel-in/Serial-out | 54/74166 | 8 | D | 88 | 7 | 35 | 20 | 360 | D176 | 4L,7B,9B |
| 6 | Parallel-in/Serial-out | 54LS/74LS165 | 8 | D | 8A | 5 | 40 | 19 | 105 | D175 | 4L,7B,9B |
| 7 | Parallel-in/Parallel-out Shift Right | 54LS/74LS95B | 4 | D | 48 | | 35 | 20 | 65 | D166 | 31,6A,9A |
| 8 | Parallel-in/Parallel-out Shift Right | 54LS/74LS195 | 4 | J,K | 48 | 7 | 39 | 17 | 70 | D163 | 4L,6B,9B |
| 9 | Parallel-in/Parallel-out Shift Right | 54LS/74LS295A | 4 | D | 48 | 7 | 28 | 40 | 75 | D171 | 31,6A,9A |
| 10 | Serial-in/Serial-out | 9328 | 16 | 2x2D Mux | _ | 7 | 30 | 17 | 300 | D177 | 4L,7B,9B |
| 11 | Serial-in/Serial-out | 93L28 | 16 | 2x2D Mux | | ı | 15 | 42 | 80 | D177 | 4L,7B,9B |
| 12 | Serial-in/Serial-out | 54/7491 | 8 | 2D | - | 2 | 18 | 25 | 175 | D178 | 31,7A,9A |
| 13 | Multiport Registers | 9338 | 8 | D | - | 2 | 25 | 23 | 425 | D153 | 4L,7B,9B |
| 14 | Multiport Registers | 93L38 | 8 | D | - | 7 | 20 | 38 | 105 | D153 | 4L,7B,9B |
| 15 | Multiport Registers | 54/74170 | 16 | _ | 4A | 2 | - | 25 | 635 | D154 | 4L,7B,9B |
| 16 | Multiport Registers | 54LS/74LS170 | 16 | - | 4A | 7 | - | 25 | 125 | D154 | 4L,7B,9B |
| 17 | Multiport Registers | 54LS/74LS670 | 16 | _ | 4A | 7 | _ | 30 | 150 | D154 | 4L,7B,9B |
| 18 | Quad D (3S) (2) | 54/74173 | 4 | - | 48 | 7 | 35 | 28 | 250 | D189 | 4L,7B,9B |
| 19 | Quad D (3S)(2) | 54LS/74LS173 | 4 | - | 48 | 7 | 30 | 18 | 35 | D189 | 4L,7B,9B |
| 20 | Successive Approx Register | 54LS/74LS502 | 8 | D | _ | 7 | 25 | 18 | 325 | D98 | 4I,6B,9B |

A = asynchronous, S = synchronous
 3S = 3-state

^{3.} To be announced

TTL

COUNTERS

| Item | Function | DEVICE NO. | Modulo | Parallel Load * | Clock Transition | Max Clock Rate MHz (Typ) | Clock to Q Output Delay-ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-----------------|--------------|-------------------|----------------------|------------------|-----------------------------|-------------------------------------|-------------------------------|-----------------------------|------------|
| 1 | Asynchronous | 54/74290 | 2x5 | | 2 | 40 | 33 | 160 | D120 | 31,6A,9A |
| 2 | Asynchronous | 54/7490A | 2x5 | 38 11 9 | 2 | 40 | 33 | 160 | D121 | 31,6A,9A |
| 3 | Asynchronous | 54LS/74LS90 | 2x5 | - | 2 | 50 | 33 | 45 | D121 | 31,6A,9A |
| 4 | Asynchronous | 54/7492 | 2x6 | C-8713189 | 2 | 40 | 33 | 160 | D122 | 31,6A,9A |
| 5 | Asynchronous | 74LS92 | 2x6 | 58 | ı | 50 | 40 | 45 | D122 | 6A,9A |
| 6 | Asynchronous | 54/74293 | 2x8 | - | 2 | 40 | 46 | 160 | D123 | 31,6A,9A |
| 7 | Asynchronous | 54/7493A | 2x8 | its do co | 2 | 40 | 46 | 160 | D124 | 31,6A,9A |
| 8 | Asynchronous | 54LS/74LS93 | 2x8 | - | 2 | 50 | 46 | 45 | D124 | 31,6A,9A |
| 9 | Asynchronous | 54/74176 | 2x5 | А | 2 | 50 | 34 | 150 | D125 | 31,6A,9A |
| 10 | Asynchronous | 54/74177 | 2x8 | А | 2 | 50 | 50 | 150 | D125 | 31,6A,9A |
| 11 | Asynchronous | 54/74196 | 2x5 | А | 2 | 70 | 38 | 240 | D125 | 31,6A,9A |
| 12 | Asynchronous | 54LS/74LS196 | 2x5 | Α | 2 | 60 | 48 | 60 | D125 | 31,6A,9A |
| 13 | Asynchronous | 54/74197 | 2x8 | А | 2 | 70 | 52 | 240 | D125 | 31,6A,9A |
| 14 | Asynchronous | 54LS/74LS197 | 2x8 | Α | 2 | 70 | 60 | 60 | D125 | 31,6A,9A |
| 15 | Asynchronous | 54LS/74LS290 | 2x5 | 10 T | 2 | 42 | 12 | 45 | D120 | 31,6A,9A |
| 16 | Asynchronous | 54LS/74LS293 | 2x8 | _ | 2 | 42 | 12 | 45 | D123 | 31,6A,9A |
| 17 | Asynchronous | 54LS/74LS390 | 2x5 | dn-ha | 2 | 60 | 36 | 64 | D194 | 4L,6B,9B |
| 18 | Asynchronous | 54LS/74LS393 | 2x8 | | 2 | 60 | 36 | 64 | D195 | 4L,6B,9B |
| 19 | Asynchronous | 54LS/74LS490 | 2x5 | | 2 | 50 | 6.0 | 100 | D84 | 4L,6B,9B |
| 20 | Variable Modulo | 9305 | 2x5,6,7,8 | 300 | 5 | 26 | 44 | 210 | D126 | 31,7A,9A |
| 21 | Variable Modulo | 93\$05 | 2x5,6,7,8 | _ | 7 | 100 | 20 | 300 | D126 | 31,7A,9A |
| 22 | Synchronous | 9310 | 10 Presettable | S | 7 | 45 | 15 | 325 | D127 | 4L,7B,9B |
| 23 | Synchronous | 93L10 | 10 Presettable | S | 7 | 23 | 26 | 85 | D127 | 4L,7B,9B |
| 24 | Synchronous | 93S10 | 10 Presettable | S | 7 | 90 | 9.0 | 410 | D127 | 4L,7B,9B |
| 25 | Synchronous | 9316 | 16 Presettable | S | 7 | 45 | 15 | 325 | D127 | 4L,7B,9B |

^{*}A = asynchronous, S = synchronous

TTL

COUNTERS (Cont'd)

| Item | Function | DEVICE NO. | Modulo | Parallel Load* | Clock Transition | Max Clock Rate MHz (Typ) | Clock to Q Output Delay-ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-------------|--------------|-------------------|----------------|------------------|-----------------------------|-------------------------------------|-------------------------------|-----------------------------|------------|
| 1 | Synchronous | 93L16 | 16 Presettable | S | 7 | 23 | 26 | 85 | D127 | 4L,7B,9B |
| 2 | Synchronous | 93\$16 | 16 Presettable | S | 7 | 90 | 9.0 | 410 | D127 | 4L,7B,9B |
| 3 | Synchronous | 54/74160 | 10 Presettable | S | 7 | 32 | 17 | 315 | D127 | 4L,7B,9B |
| 4 | Synchronous | 54LS/74LS160 | 10 Presettable | S | 7 | 45 | 15 | 95 | D127 | 4L,7B,9B |
| 5 | Synchronous | 54/74161 | 16 Presettable | S | 7 | 32 | 17 | 315 | D127 | 4L,7B,9B |
| 6 | Synchronous | 54LS/74LS161 | 16 Presettable | S | 7 | 45 | 15 | 95 | D127 | 4L,7B,9B |
| 7 | Synchronous | 54/74162 | 10 Presettable | S | 7 | 32 | 17 | 315 | D128 | 4L,7B,9B |
| 8 | Synchronous | 54LS/74LS162 | 10 Presettable | S | 7 | 45 | 15 | 95 | D128 | 4L,7B,9B |
| 9 | Synchronous | 54/74163 | 16 Presettable | S | 7 | 32 | 17 | 315 | D128 | 4L,7B,9B |
| 10 | Synchronous | 54LS/74LS163 | 16 Presettable | S | 7 | 45 | 15 | 95 | D128 | 4L,7B,9B |
| 11 | Up/Down | 54LS/74LS168 | 10 Presettable | 828 | 7 | 32 | 15 | 100 | D83 | 4L,6B,9B |
| 12 | Up/Down | 54LS/74LS169 | 16 Presettable | <u>8</u> 3) | 7 | 32 | 15 | 100 | D83 | 4L,6B,9B |
| 13 | Up/Down | 54/74192 | 10 | Α | 7 | 30 | 30 | 325 | D129 | 4L,7B,9B |
| 14 | Up/Down | 54LS/74LS192 | 10 | А | 7 | 40 | 30 | 85 | D129 | 4L,7B,9B |
| 15 | Up/Down | 54/74193 | 16 | А | 7 | 30 | 30 | 325 - | D129 | 4L,7B,9B |
| 16 | Up/Down | 54LS/74LS193 | 16 | Α | 7 | 40 | 30 | 85 | D129 | 4L,7B,9B |
| 17 | Up/Down | 54/74190 | 10 | Α | 7 | 25 | 20 | 325 | D130 | 4L,7B,9B |
| 18 | Up/Down | 74LS190 | 10 | А | 7 | 40 | 20 | 90 | D130 | 7B,9B |
| 19 | Up/Down | 54/74191 | 16 | А | 7 | 25 | 20 | 325 | D130 | 4L,7B,9B |
| 20 | Up/Down | 74LS191 | 16 | Α | 7 | 40 | 20 | 90 | D130 | 7B,9B |

^{*}A = asynchronous, S = synchronous

TTL

COUNTERS (Cont'd)

| Item | Function | DEVICE NO. | Modulo | Parallel Load (1) | Clock Transition | Max Clock Rate MHz (Typ) | Clock to Q Output Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-----------------|------------------------------|-------------------|-------------------|------------------|-----------------------------|-------------------------------------|-------------------------------|-----------------------------|------------|
| 1 | Up/Down | 54LS ⁽²⁾ /74LS568 | 10 Presettable | S | 7 | 2-01 | - | | D99 | 9Z |
| 2 | Up/Down | 54LS ⁽²⁾ /74LS569 | 16 Presettable | S | 7 | _10 | 89 | MA 0 | D99 | 9Z |
| 3 | Rate Multiplier | 54/7497 | M.f./64 | 1 = 5 | 7 | 32 | 20 | 400 | D187 | 4L,7B,9B |
| 4 | Rate Multiplier | 54/74167 | M.f./10 | (F) | 7 | 32 | 20 | 325 | D188 | 4L,7B,9B |

MONOSTABLES (ONE-SHOTS)

| | als ard arr ar | | | Width on (%) | | . of | | (tw) ns | Dissipation V (Typ) | Connection | |
|------|--------------------------|---------------|----------|-----------------|----------|----------|------------|------------|------------------------|------------------------|------------|
| Item | Function | DEVICE NO | vs. Temp | vs. VCC | Positive | Negative | Resettable | Min Output | Power Diss mW (T) | Logic/Conne Diagram | Package(s) |
| 5 | Single Retriggerable | 9600 | ±1.5 | ±1.5 | 3 | 2 | X | 75 | 125 | D40 | 31,6A |
| 6 | Single Retriggerable | 9601 | ±2.7 | ±1.0 | 2 | 2 | | 50 | 125 | D41 | 31,6A,9A |
| 7 | Dual Retriggerable | 9602 | ±1.5 | ±1.5 | 1 | 1 | X | 72 | 250 | D42 | 4L,6B,9B |
| 8 | Dual Retriggerable | 96L02 | ±0.4 | ±1.5 | 1 | 1 | X | 110 | 50 | D42 | 4L,6B,9B |
| 9 | Dual Retriggerable | 96S02 | ±0.2 | ±0.2 | 1 | 1 | X | 27 | 250 | D42 | 4L,6B,9B |
| 10 | Single Non-Retriggerable | 9603,54/74121 | ±0.2 | ±0.15 | 1 | 2 | | 40 | 90 | D43 | 31,6A,9A |
| 11 | Single Retriggerable | 54/74122 | ±2.7 | ±1.0 | 2 | 2 | X | 45 | 115 | D44 | 31,6A,9A |
| 12 | Dual Retriggerable | 54/74123 | ±2.7 | ±1.0 | 1 | 1 | X | 45 | 230 | D45 | 4L,6B,9B |
| 13 | Dual Retriggerable | 96LS02 | ±0.5 | ±0.7 | 1 | 1 | X | 35 | 175 | D42 | 4L,6B,9B |

^{1.} A = asynchronous, S = synchronous

^{2.} To be announced

LINE AND BUS DRIVERS

| Item | Function ⁽¹⁾ | DEVICE NO. | Companion Receiver | Supply Voltages V | л У | VOL VOL | tpd ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|--|----------------------------------|--------------------|-------------------|--------|---------|-----------------|-------------------------------|-----------------------------|------------|
| 1 | Quad 2 NAND Driver | 54/7437 | Any TTL | 5.0 | 2.4 | 0.4 | 10 | 108 | D2 | 31,6A,9A |
| 2 | Quad 2 NAND Driver | 54/7438 | 96106 | 5.0 | 5.5 | 0.4 | 13 | 98 | D2 | 31,6A,9A |
| 3 | Quad 2 NAND Driver (OC) | 96101 | 96106 | 5.0 | 5.5 | 0.6 | 13 | 98 | D3 | 31,6A,9A |
| 4 | Dual 2 NAND Driver | 9009 | Any TTL | 5.0 | 2.4 | 0.4 | 10 | 54 | D5 | 31,6A |
| 5 | Dual 2 NAND Driver | 54/7440 | Any TTL | 5.0 | 2.4 | 0.4 | 11 | 52 | D5 | 31,6A,9A |
| 6 | Dual 2 NAND Driver | 54H/74H40 | Any TTL | 5.0 | 2.4 | 0.4 | 7.0 | 88 | D5 | 31,6A,9A |
| 7 | Dual 2 NAND Driver | 54S/ 74S40 | Any TTL | 5.0 | 2.7 | 0.5 | 4.0 | 88 | D5 | 31,6A,9A |
| 8 | Dual 2 NAND 50Ω Driver | 54S/ 74S140 | Any TTL | 5.0 | 2.0 | 0.5 | 4.0 | 88 | D5 | 3I,6A,9A |
| 9 | Quad Inverting Bus Transceiver | 54LS/ 74LS242 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 175 | D75 | 31,6A,9A |
| 10 | Quad Non-inverting Bus Transceiver | 54LS/ 74LS243 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 180 | D76 | 31,6A,9A |
| 11 | Octal Inverting Bus Driver (3S) | 54LS ⁽²⁾ / 74LS240 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 175 | D73 | 9Z |
| 12 | Octal Non-inverting Bus Driver (3S) | 54LS ⁽²⁾ / 74LS241 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 180 | D74 | 9Z |
| 13 | Octal Non-inverting Bus Driver (3S) | 54LS ⁽²⁾ / 74LS244 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 180 | D77 | 9Z |
| 14 | Octal Bus Transceiver | 54LS ⁽²⁾ / 74LS245 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 375 | D78 | 9Z |
| 15 | Octal Inverting Bus Transceiver | 54LS ⁽²⁾ / 74LS540 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 175 | D80 | 9Z |
| 16 | Octal Non-inverting Bus Transceiver | 54LS ⁽²⁾ / 74LS541 | Any TTL | 5.0 | 2.4 | 0.4 | 12 | 180 | D81 | 9Z |

^{1.} OC = open collector, 3S = 3-state

^{2.} To be announced

DISPLAY DECODER/DRIVERS

| Item | Function* | DEVICE NO. | Output Current mA | Output Voltage V | Active HIGH/LOW | Ripple Blanking | Blanking Above BCD 9-Input | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|---------------------------------------|--------------|----------------------|---------------------|-----------------|-----------------|-------------------------------|-------------------------------|-----------------------------|------------|
| 1 | 1-of-10 Cold Cathode | 54/7441 | 7.0 | 55 | L | +0 | e - | 145 | D140 | 4L,6B,9B |
| 2 | 1-of-10-Cold Cathode | 54/74141 | 7.0 | 55 | L | DA TAN | X | 80 | D140 | 4L,7B,9B |
| 3 | 1-of-10 Driver (OC) | 9302 | 16 | 5.5 | L | _ | X | 145 | D133 | 4L,6B,9B |
| 4 | 1-of-10 Driver (OC) | 54/7445 | 80 | 30 | L | | X | 215 | D135 | 4L,7B,9B |
| 5 | 1-of-10 Driver (OC) | 54/74145 | 80 | 15 | L | 100 | X | 215 | D135 | 4L,7B,9B |
| 6 | 7-Seg Decoder | 9307 | 11 | 5.5 | Н | X | | 165 | D141 | 4L,7B,9B |
| 7 | 7-Seg Decoder | 54/7448 | 8.0 | 5.5 | Н | X | 8 _ | 265 | D141 | 4L,7B,9B |
| 8 | 7-Seg Decoder | 5449 | 9.6 | 5.5 | Н | X | _ | 165 | D142 | 31 |
| 9 | 1-of-10 Cold Cathode | 9315 | 7.0 | 55 | L | _ <u>0</u> Y | | 145 | D140 | 4L,6B,9B |
| 10 | 7-Seg Decoder/Driver | 9317B | 40 | 20 | L | X | X | 220 | D143 | 4L,7B,9B |
| 11 | 7-Seg Decoder/Driver | 9317C | 20 | 30 | L | X | X | 220 | D143 | 4L,7B,9B |
| 12 | 7-Seg Decoder/Driver | 54/7446 | 40 | 30 | L | X | | 320 | D143 | 4L,7B,9B |
| 13 | 7-Seg Decoder/Driver | 54/7447 | 40 | 15 | L | X | | 320 | D143 | 4L,7B,9B |
| 14 | 7-Seg Decoder/Driver | 54LS/74LS47 | 12 | 15 | L | X | - | 35 | D143 | 4L,6B,9B |
| 15 | 7-Seg Decoder/Driver | 54LS/74LS48 | 1.3 | 5.5 | Н | X | - | 125 | D141 | 4L,6B,9B |
| 16 | 7-Seg Decoder/Driver | 54LS/74LS49 | 1.3 | 5.5 | Н | X | - | 40 | D142 | 31,6A,9A |
| 17 | 7-Seg Decoder/Driver | 54LS/74LS247 | 12 | 15 | L | X | | 30 | D143 | 4L,6B,9B |
| 18 | 7-Seg Decoder/Driver | 54LS/74LS248 | 1.3 | 5.5 | Н | X | - | 125 | D141 | 4L,6B,9B |
| 19 | 7-Seg Decoder/Driver | 54LS/74LS249 | 1.3 | 5.5 | Н | X | _ | 40 | D141 | 4L,6B,9B |
| 20 | 7-Seg LED Driver Common Cathode | 9368 | 20 | 1.7 | н | X | | 225 | D144 | 6B,9B |
| 21 | 7-Seg LED Driver Common Anode (OC) | 9370 | 25 | 5.5 | L | X | 9 | 350 | D145 | 6B,9B |
| 22 | 7-Seg LED Driver Common Anode | 9374 | 15 | 10 | L | X | | 175 | D145 | 6B,9B |

^{*}OC = open collector

TTL

ARITHMETIC OPERATORS

| Item | Function | DEVICE NO. | Description* | No. of Bits | tpd ns | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-----------------------|----------------------|------------------------------|-------------|-----------|-------------------------------|-----------------------------|------------|
| 1 | Adder | 54/7480 | Gated 1-Bit with Carry | 1 | 47 | 105 | D100 | 31,6A,9A |
| 2 | Adder | 9304 | Dual 1-Bit with Carry | 2 | 26 | 150 | D101 | 31,6A,9A |
| 3 | Adder | 93H183 54H/74H183 | Dual 1-Bit with Carry | 2 | 12 | 250 | D102 | 31,6A,9A |
| 4 | Adder | 54/7482 | Full2-Bit with Carry | 2 | 38 | 176 | D103 | 31,6A,9A |
| 5 | Adder | 54/7483A | Full Binary 4-Bit w/Carry | 4 | 16 | 330 | D104 | 4L,6B,9B |
| 6 | Adder | 54LS/74LS83 | Full Binary 4-Bit w/Carry | 4 | 15 | 95 | D104 | 4L,6B,9B |
| 7 | Adder | 54/74283 | Full Binary 4-Bit w/Carry | 4 | 16 | 330 | D105 | 4L,6B,9B |
| 8 | Adder | 54LS/74LS283 | Full Binary 4-Bit w/Carry | 4 | 15 | 95 | D105 | 4L,6B,9B |
| 9 | Arithmetic Logic Unit | 9340 | ALU with Internal CLA | 4 | 24 | 400 | D106 | 4M,6N,9N |
| 10 | Arithmetic Logic Unit | 54/74181 | ALU with External CLA | 4 | 27 | 450 | D107 | 4M,6N,9N |
| 11 | Arithmetic Logic Unit | 93L41 | ALU with External CLA | 4 | 35 | 120 | D107 | 4M,6N,9N |
| 12 | Arithmetic Logic Unit | 74LS181 | ALU with External CLA | 4 | 20 | 105 | D107 | 6N,9N |
| 13 | Arithmetic Logic Unit | 93S41 | ALU with External CLA | 4 | 12 | 500 | D107 | 4M,6N,9N |
| 14 | Carry Lookahead | 54/74182 | CLA generator for 9341 | - | 12 | 180 | D108 | 4L,6B,9B |
| 15 | Carry Lookahead | 54S/74S182 | CLA generator for 93S41/9405 | - | 7.0 | 260 | D108 | 4L,6B,9B |
| 16 | Carry Lookahead | 54LS/74LS182 | CLA for 74LS181 | 4 | 20 | 60 | D108 | 4L,6B,9B |
| 17 | Comparator | 9386 (8242) | 4-Bit Ident Excl NOR | 4 | 18 | 170 | D24 | 31,6A,9A |
| 18 | Comparator | 54/7485 | 4-Bit Magnitude w/Exp | 4 | 21 | 275 | D109 | 4L,7B,9B |
| 19 | Comparator | 54LS/74LS85 | 4-Bit Magnitude w/Exp | 4 | 21 | 52 | D109 | 4L,7B,9B |
| 20 | Comparator | 9324 | 5-Bit Magnitude | 5 | 20 | 210 | D110 | 4L,7B,9B |
| 21 | Comparator | 93L24 | 5-Bit Magnitude | 5 | 55 | 55 | D110 | 4L,7B,9B |
| 22 | Comparator | 93\$46 | 6-Bit Identity w/Exp | 6 | 9.0 | 225 | D111 | 4L,6B,9B |
| 23 | Comparator | 93\$47 | 6-Bit Identity (OC) | 6 | 10 | 175 | D112 | 4L,6B,9B |
| 24 | Encoder | 9318 | Priority 8-Bit w/Exp | 8 | 13 | 250 | D113 | 4L,6B,9B |
| 25 | Encoder | 93L18 | Priority 8-Bit w/Exp | 8 | 24 | 75 | D113 | 4L,6B,9B |

^{*} CLA = carry lookahead, OC = open collector

TTL

ARITHMETIC OPERATORS (Cont'd)

| Item | Function | DEVICE NO. | Description | No. of Bits | tpd ns | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|------------------------|------------|---|-------------|-----------|-------------------------------|-----------------------------|------------|
| 1 | Multiplier | 9344 | Binary 4x2-Bit | 4x2 | 30 | 550 | D114 | 4M,6N,9N |
| 2 | Multiplier | 93\$43 | 2s Complement | 4x2 | 20 | 490 | D115 | 4M,6N,9N |
| 3 | Parity Generator/Check | 54/74180 | 8-Bit Parity Gen/Check | 8 | 40 | 170 | D116 | 31,6A,9A |
| 4 | Parity Generator/Check | 93S62 | 9-Bit Parity Gen/Check | 9 | 20 | 225 | D117 | 31,6A,9A |
| 5 | Parity Generator/Check | 9348 | 12-Bit Parity Gen/Check | 12 | 40 | 235 | D118 | 4L,6B,9B |
| 6 | True/Complement | 54H/74H87 | 4-Bit True/Complement Zero/One Element | 4 | 14 | 270 | D119 | 31,6A,9A |
| 7 | True/Complement | 54S/74S135 | Dual 2-Bit Exclusive OR/NOR | 4 | 9 | 325 | D23 | 4L,6B,9B |

ECL

SSI FUNCTIONS

| Item | Function | DEVICE NO.* | ^t pd ns (Typ) | Power Dissipation mW (Typ) | Logic/ Connection Diagram | Package(s) |
|-------|--------------|-------------|-----------------------------|----------------------------------|---------------------------------|------------|
| OR G | ates | | | | omen. | |
| 8 | Dual 3/3 OR | 95110 | 2.5 | 145 | E81 | 6B |
| 9 | Dual 3/3 OR | 10110/10510 | 2.4 | 145 | E81 | 4L,6B,9B |
| 10 | Dual 3/3 OR | 10210/10610 | 1.5 | 160 | E81 | 4L,6B |
| 11 | Quad OR | 95103 | 2.0 | 100 | E76 | 6B |
| 12 | Quad OR | 10103/10503 | 2.0 | 100 | E76 | 4L,6B,9B |
| 13 | Quad Exc OR | 10113/10513 | 3.0 | 170 | E84 | 4L,6B,9B |
| Quad | AND Gates | | | | abwar | |
| 14 | Quad AND | 10104/10504 | 2.4 | 145 | E83 | 4L,6B,9B |
| NOR (| Gates | Mr. Till | | rereer | ROMBI | Section 1 |
| 15 | Dual 3/3 NOR | 95111 | 2.5 | 145 | E82 | 6B |
| 16 | Dual 3/3 NOR | 10111/10511 | 2.4 | 145 | E82 | 4L,6B,9B |
| 17 | Dual 3/3 NOR | 10211/10611 | 1.5 | 160 | E82 | 4L,6B |

^{*105}XX and 106XX = Military temperature range

SSI FUNCTIONS (Cont'd)

| Item | Function | DEVICE NO.* | tpd ns (Typ) | Power Dissipation mW (Typ) | Logic/ Connection Diagram | Package(s | |
|------|-------------------|-------------|-----------------|----------------------------------|---------------------------------|-----------|--|
| NOR | Gates (Cont'd) | | | | | | |
| 1 | Triple NOR | 95106 | 2.0 | 75 | E78 | 6B | |
| 2 | Triple NOR | 10106/10506 | 2.0 | 75 | E78 | 4L,6B,9B | |
| 3 | Quad NOR | 9504 | 2.3 | 280 | E68 | 6B | |
| 4 | Quad NOR | 95H04 | 1.6 | 250 | E68 | 6B | |
| 5 | Quad NOR | 95H24 | 1.6 | 210 | E68 | 6B | |
| 6 | Quad NOR | 95L24 | 2.0 | 80 | E68 | 6B | |
| 7 | Quad NOR | 95004 | 2.0 | 90 | E73 | 6B | |
| 8 | Quad NOR | 95102 | 2.0 | 100 | E75 | 6B | |
| 9 | Quad NOR | 10100/10500 | 2.0 | 100 | E96 | 4L,6B,9B | |
| 10 | Quad NOR | 10102/10502 | 2.0 | 100 | E75 | 4L,6B,9B | |
| OR/N | IOR Gates | | | | | | |
| 11 | Dual OR/NOR | 9502 | 2.3 | 180 | E66 | 6B | |
| 12 | Dual OR/NOR | 95H02 | 1.6 | 170 | E66 | 6E | |
| 13 | Dual OR/NOR | 95H22 | 1.6 | 130 | E66 | 6B | |
| 14 | Dual OR/NOR | 95L22 | 2.0 | 55 | E66 | 6E | |
| 15 | Dual OR/NOR | 95002 | 2.0 | 50 | E71 | 6E | |
| 16 | Dual OR/NOR | 95109 | 2.0 | 50 | E80 | 6B | |
| 17 | Dual OR/NOR | 10109/10509 | 2.0 | 50 | E80 | 4L,6B,9B | |
| 18 | Dual OR/NOR | 11C01 | 0.7 | 125 | E94 | 4L,6B | |
| 19 | Triple OR/NOR | 9503 | 2.3 | 250 | E67 | 6E | |
| 20 | Triple OR/NOR | 95H03 | 1.6 | 225 | E67 | 6B | |
| 21 | Triple OR/NOR | 95H23 | 1.6 | 165 | E67 | 6B | |
| 22 | Triple OR/NOR | 95L23 | 2.0 | 65 | E67 | 6E | |
| 23 | Triple OR/NOR | 95003 | 2.0 | 75 | E72 | 6E | |
| 24 | Triple OR/NOR | 95105 | 2.0 | 75 | E77 | 6B | |
| 25 | Triple OR/NOR | 10105/10505 | 2.0 | 75 | E77 | 4L,6B,9E | |
| 26 | Triple OR/NOR | 100101 | 0.7 | 120 | F89 | 4Q,6Q | |
| 27 | Triple Exc OR/NOR | 95107 | 2.4 | 115 | E79 | 6B | |
| 28 | Triple Exc OR/NOR | 10107/10507 | 2.4 | 115 | E79 | 4L,6B,9B | |
| 29 | Quad OR/NOR | 95101 | 2.0 | 100 | E74 | 6B | |

^{*105}XX and 106XX = Military temperature range

ECL

SSI FUNCTIONS (Cont'd)

| Item | Function | DEVICE NO.* | tpd ns (Typ) | Power Dissipation mW (Typ) | Logic/ Connection Diagram | Package(s) |
|------|----------------------|-------------|-----------------|----------------------------------|---------------------------------|-------------|
| OR/N | IOR Gates (Cont'd) | | | | | |
| 1 | Quad OR/NOR | 10101/10501 | 2.0 | 100 | E74 | 4L,6B,9B |
| 2 | Quint OR/NOR | 100102 | 0.7 | 230 | E90 | 4Q,6Q |
| 3 | Quint Exc OR/NOR | 100107 | 0.7 | 300 | E91 | 4Q,6Q |
| OR/A | ND Gates | 1.6 = 0.6 | | 8,027,002,01 | 1 5 00 150 | |
| 4 | 2-Wide OA | 10118/10518 | 2.3 | 105 | E86 | 4L,6B,9B |
| 5 | 4-Wide OA | 9505 | 2.6 | 315 | E69 | 6B |
| 6 | 4-Wide OA | 10119/10519 | 2.3 | 105 | E87 | 4L,6B,9B |
| OR/A | ND/Invert Gates | | | 2000 | 100 | |
| 7 | Triple 2-Wide OA/OAI | 100117 | 0.7 | 240 | E92 | 4Q,6Q |
| 8 | 5-Wide OA/OAI | 100118 | 0.7 | 175 | E93 | 4Q,6Q |
| 9 | Dual 2-Wide OAI | 10117/10517 | 2.3 | 105 | E85 | 4L,6B,9B |
| 10 | 4-Wide OAI | 10121/10521 | 2.3 | 105 | E88 | 4L,6B,9B |
| AND/ | NAND Gates | las Isalia. | 1242 1 | 8536 | l des | ul bealt la |
| 11 | Quad AND/NAND | 9507 | 3.2 | 315 | E70 | 6B |

LATCHES/FLIP-FLOPS

| Item | Function | DEVICE NO.* | Data Inputs | Direct Set/Clear or Common Clear | Enable/Clock inputs (Level) | Required Enable/Clock Pulse Width-ns (Typ) | Enable /Clock to Q Delay-ns (Typ) | Data to Q Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|---------------------|-------------|-------------|-------------------------------------|--------------------------------|---|--------------------------------------|-----------------------------|-------------------------------|-----------------------------|------------|
| 12 | 750 MHz D Flip-Flop | 11C06 | 2 | No | 7 | 0.7 | 1.0 | 1.0 | 210 | E43 | 6B |
| 13 | Dual D Flip-Flop | 9528 | 2 | Yes | 7 | 3.0 | 3.6 | 3.6 | 330 | E26 | 6B |
| 14 | Dual D Flip-Flop | 95H28 | 2 | Yes | 7 | 2.0 | 3.0 | 3.0 | 330 | E26 | 6B |
| 15 | Dual D Flip-Flop | 95231 | 2 | Yes | 7 | 2.5 | 2.8 | 2.8 | 245 | E31 | 6B |
| 16 | Dual D Flip-Flop | 10131/10531 | 2 | Yes | 7 | 3.0 | 3.0 | 2.2 | 235 | E31 | 4L,6B,9B |
| 17 | Dual D Flip-Flop | 10231/10631 | 2 | Yes | 7 | 2.5 | 2.8 | 2.8 | 245 | E31 | 4L,6B,9B |
| 18 | Triple D Flip-Flop | 100131 | 3 | Yes | 7 | 1.0 | 1.3 | 0.85 | 475 | E46 | 4Q,6Q |
| 19 | Hex D Flip-Flop | 10176/10576 | 6 | No | 7 | 3.0 | 3.0 | 5.0 | 455 | E40 | 4L,6B,9B |

^{*105}XX and 106XX = Military temperature range

ECL

LATCHES/FLIP-FLOPS (Cont'd)

| Item | Function | DEVICE NO.* | Data Inputs | Direct Set/Clear or Common Clear | Enable/Clock Inputs (Level) | Required Enable/Clock Pulse Width-ns (Typ) | Enable /Clock to Q Delay-ns (Typ) | Data to Q Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-----------------------------|-------------|-------------|-------------------------------------|--------------------------------|---|--------------------------------------|-----------------------------|-------------------------------|-----------------------------|------------|
| 1 | Hex D Flip-Flop | 10186/10586 | 6 | Yes | 5 | 3.0 | 3.0 | 5.0 | 455 | E41 | 4L,6B,9B |
| 2 | Hex D Flip-Flop | 100151 | 6 | Yes | 7 | 1.4 | 1.1 | 0.75 | 550 | E48 | 4Q,6Q |
| 3 | Master/Slave D Flip-Flop | 11C70 | 1, | Yes | 7 | 0.7 | 1.0 | 1.0 | 210 | E44 | 6B |
| 4 | JK Flip-Flop | 95H29 | 1 | Yes | ٦ | 2.0 | 3.0 | 3.0 | 180 | E27 | 6B |
| 5 | JK Flip-Flop | 95029 | 3 | Yes | 7 | 2.0 | 2.8 | 2.8 | 185 | E29 | 6B |
| 6 | Dual JK Flip-Flop | 10135/10535 | 2 | No | 7 | 2.5 | 3.0 | 3.0 | 235 | E35 | 4L,6B,9B |
| 7 | Dual D Latch | 95130 | 2 | Yes | Н | 2.5 | 2.7 | 2.5 | 135 | E30 | 6B |
| 8 | Dual D Latch | 10130/10530 | 2 | Yes | Н | 2.5 | 2.7 | 2.5 | 135 | E30 | 4L,6B,9B |
| 9 | Triple D Latch | 100130 | 3 | Yes | Н | 1.0 | 1.3 | 0.85 | 400 | E45 | 4Q,6Q |
| 10 | Quad Latch | 9534 | 4 | Yes | L | 2.2 | 5.6 | 4.3 | 415 | E28 | 6B |
| 11 | Quad Latch | 10133/10533 | 4 | No | L | 4.0 | 4.0 | 4.0 | 310 | E33 | 4L,6B,9B |
| 12 | Quad Latch | 10153/10553 | 4 | No | Н | 4.0 | 4.0 | 4.0 | 310 | E36 | 4L,6B,9B |
| 13 | Quad Latch | 10168/10568 | 4 | No | L | 4.0 | 4.0 | 4.0 | 310 | E39 | 4L,6B,9B |
| 14 | Quint Latch | 10175/10575 | 5 | Yes | Н | 3.3 | 3.3 | 2.5 | 405 | E49 | 4L,6B,9B |
| 15 | Hex D Latch | 10 0150 | 6 | Yes | Н | 1.4 | 1.1 | 0.75 | 420 | E37 | 4Q,6Q |
| 16 | Dual Mux/Latch | 10132/10532 | 4 | Yes | Н | 4.5 | 4.5 | 3.5 | 230 | E32 | 4L,6B,9B |
| 17 | Dual Mux/Latch | 10134/10534 | 4 | No | Н | 4.6 | 4.5 | 3.0 | 230 | E34 | 4L,6B,9B |
| 18 | Quad Mux/Latch | 10173/10573 | 8 | No | Н | 4.5 | 4.5 | 2.5 | 310 | E38 | 4L,6B,9B |
| 19 | Quad Mux/Latch | 100155 | 4+4 | Yes | Н | 1.2 | 1.2 | 0.85 | 430 | E47 | 4Q,6Q |

^{*105}XX and 106XX = Military temperature range

ECL

MULTIPLEXERS

| Item | Function | DEVICE NO.* | Enable Inputs | True Output | Complement Output | Select Delay ns (Typ) | Enable Delay ns (Typ) | Data Delay ns (Typ) | Power Dissipation mW (Typ) | Fan-Out | Logic/Connection Diagram | Package(s) |
|------|---------------------|-------------|---------------|-------------|-------------------|--------------------------|--------------------------|------------------------|-------------------------------|------------------|-----------------------------|------------|
| 1 | Dual Multiplexer | 10174/10574 | 1 | 2 | 0 | 4.0 | 2.0 | 3.0 | 210 | 50 Ω Line | E54 | 4L,6B,9B |
| 2 | Triple Multiplexer | 100171 | 1 | 3 | 3 | 1.7 | 2.0 | 0.8 | 360 | 50 Ω Line | E55 | 4Q,6Q |
| 3 | Triple Multiplexer | 9580 | 1 | 3 | 0 | 3.2 | 3.2 | 2.6 | 300 | 50 Ω Line | E51 | 6B |
| 4 | Quad Multiplexer | 9579 | 0 | 4 | 0 | 4.0 | 1000 | 2.6 | 260 | 50 Ω Line | E50 | 6B |
| 5 | Quad Multiplexer | 10158/10558 | 0 | 4 | 0 | 3.2 | () <u>150</u> 0 | 2.5 | 200 | 50 Ω Line | E98 | 4L,6B,9B |
| 6 | Quad Multiplexer | 10159/10559 | 1 | 0 | 4 | 3.2 | 2.5 | 2.5 | 220 | 50 Ω Line | E97 | 4L,6B,9B |
| 7 | 8-to-1 Multiplexer | 9581 | 1 | 1 | 0 | 5.5 | 3.5 | 3.2 | 260 | 50 Ω Line | E52 | 6B |
| 8 | 8-to-1 Multiplexer | 10164/10564 | 1 | 1 | 0 | 4.0 | 2.0 | 3.0 | 285 | 50 Ω Line | E53 | 4L,6B,9B |
| 9 | 16-to-1 Multiplexer | 100164 | 0 | 1 | 0 | 2.1 | _ | 1.6 | 315 | 50 Ω Line | E99 | 4Q,6Q |
| 10 | Dual 8 Multiplexer | 100163 | 0 | 2 | 0 | 1.95 | _ | 1.3 | 500 | 50 Ω Line | E112 | 4Q,6Q |

DECODERS/DEMULTIPLEXERS

| Item | Function | DEVICE NO.* | Address Inputs | Active LOW Enable | Active LOW Outputs | Active HIGH Outputs | Select Delay ns (Typ) | Enable Delay ns (Typ) | Power Dissipation mW (Typ) | Fan-Out | Logic/Connection Diagram | Package(s) |
|------|--------------------------------|-------------|----------------|-------------------|--------------------|---------------------|--------------------------|--------------------------|-------------------------------|------------------|-----------------------------|------------|
| 11 | 1-of-8 Decoder | 9538 | 3 | 2 | 8 | 0 | 3.0 | 5.0 | 275 | 50 Ω Line | E7 | 6B |
| 12 | 1-of-8 Demux/Decoder | 10161/10561 | 3 | 2 | 8 | 0 | 4.0 | 4.0 | 285 | 50 Ω Line | E8 | 4L,6B,9B |
| 13 | 1-of-8 Demux/Decoder | 10162/10562 | 3 | 2 | 0 | 8 | 4.0 | 4.0 | 285 | 50 Ω Line | E9 | 4L,6B,9B |
| 14 | Dual 1-of-4 Demux/ Decoder | 10171/10571 | 2 | 2+1 | 4+4 | 0 | 4.0 | 4.0 | 320 | 50 Ω Line | E10 | 4L,6B,9B |
| 15 | Dual 1-of-4 Demux/ Decoder | 10172/10572 | 2 | 2+1 | 0 | 4+4 | 4.0 | 4.0 | 320 | 50 Ω Line | E11 | 4L,6B,9B |
| 16 | Multipurpose Demux/ Decoder | 100170 | 5 | 2+2 | 4or8 | 4 or 8 | 1.7 | 1.2 | 565 | 50 Ω Line | E12 | 4Q,6Q |

^{*105}XX and 106XX = Military temperature range

ECL

REGISTERS

| Item | Function | DEVICE NO.* | No. of Bits | Serial Entry | Parallel Entry No. of Bits | Max Clock Freq. MHz (Typ) | Clock To Output Delay-ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|---------------------------------|-------------|-------------|--------------------------------|-------------------------------|------------------------------|-----------------------------------|-------------------------------|-----------------------------|------------|
| i | 4-Bit Shift Register | 95H00 | 4 | D | 48 | 150 | 3.2 | 395 | E63 | 6B |
| 2 | 4-Bit Shift Register | 95000 | 4 | D | 48 | 200 | 3.2 | 345 | E64 | 6B |
| 3 | 4-Bit Shift Register | 10000 | 4 | D | 48 | 200 | 3.2 | 345 | E64 | 4L,6B,9B |
| 4 | 4-Bit Left/Right Shift Register | 10141/10541 | 4 | D _L ,D _R | 48 | 350 | 2.2 | 400 | E65 | 4L,6B,9B |
| 5 | 8-Bit Left/Right Shift Register | 100141 | 8 | DR | 8 | 500 | 1.6 | 765 | E100 | 4Q,6Q |
| 6 | 16x4 Register File | 100145A | 64 | DR | - | 10 1 0 | 10- | 765 | E101 | 4Q,6Q |
| 7 | 8-Bit Shift Matrix | 100158 | 8 | 0 - 1 | 8 | 10 1 (8) | EL- | 630 | E102 | 4Q,6Q |

COUNTERS/PRESCALERS

| Item | Function Full 100 100 100 100 100 100 100 100 100 1 | DEVICE NO.* | Modulo | Parallel Load | Max Clock Rate MHz (Typ) | Clock to Q Output Delay ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|---|-------------|-------------|---------------|-----------------------------|--|-------------------------------|-----------------------------|------------|
| 8 | Binary Counter | 95H16 | 2,4,8 or 16 | 4 | 200 | 3.6 | 470 | E1 | 6B |
| 9 | Binary Counter | 95016 | 2,4,8 or 16 | 4 | 200 | 3.6 | 415 | E3 | 6B |
| 10 | Binary Counter | 10016 | 2,4,8 or 16 | 4 | 200 | 3.6 | 415 | E3 | 4L,7B,9B |
| 11 | Binary Counter | 10136/10536 | 2,4,8 or 16 | 4 | 200 | _ | 520 | E4 | 4L,7B |
| 12 | Binary Counter/Register | 100136 | 2,4,8 or 16 | 4 | 450 | 1.4 | 765 | E103 | 4Q,6Q |
| 13 | Decade Counter | 95010 | 10 | 4 | 200 | 3.6 | 415 | E3 | 6B |
| 14 | Decade Counter | 10010 | 10 | 4 | 200 | 3.6 | 415 | E3 | 4L,7B,9B |
| 15 | Decade Counter | 10137/10537 | 10 | 4 | 200 | 1-2 | 520 | E4 | 4L,7B |
| 16 | ÷ 4 Prescaler | 11C05 | 4 | 200 | 1100 | er (<u>14</u> 55 | 340 | E5 | 6B |
| 17 | ÷ 5/6 Prescaler | 95H91 | 5 or 6 | MS | 320 | 5.1 | 390 | E2 | 6B |
| 18 | ÷ 5/6 Prescaler | 11C91 | 5 or 6 | MS | 600 | | 300 | E6 | 6B |
| 19 | ÷ 10/11 Prescaler | 95H90 | 10 or 11 | MS | 320 | 5.1 | 440 | E2 | 6B |
| 20 | ÷ 10/11 Prescaler | 11C90 | 10 or 11 | MS | 600 | | 300 | E6 | 6B |
| 21 | ÷ 248/256 Prescaler | 11C83 | 248 or 256 | MS | 1100 | _ | 520 | E104 | 6A |

^{*105}XX and 106XX = Military temperature range

ECL

ARITHMETIC OPERATORS

| item | Legle/Connection Displain Pedu | DEVICE NO.* | No. of Input Bits | tpd ns (Typ) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
|------|-----------------------------------|-------------|-------------------|-----------------|-------------------------------|-----------------------------|------------|
| | Function | | | | | | |
| 1 | Adder/Subtractor | 95H84 | 2x2 | 4.6 | 485 | E58 | 6B |
| 2 | Dual Adder/Subtractor | 10180/10580 | 2x2 | 2.2 | 340 | E62 | 4L,6B,9B |
| 3 | Carry Lookahead | 10179/10579 | 4x2 | 3.0 | 305 | E61 | 4L,6B,9B |
| 4 | Carry Lookahead | 100179 | 16 | 2.1 | 742 | E111 | 4Q,6Q |
| 5 | 4-Bit ALU | 10181/10581 | 4x2 | 6.0 | 600 | E95 | 4M,6N |
| 6 | 4-Bit Binary/Decimal ALU | 100181 | 4x2 | 4.5 | 765 | E107 | 4Q,6Q |
| 7 | 4-Bit Comparator | 9578 | 4x2 | 3.2 | 275 | E57 | 6B |
| 8 | 5-Bit Comparator | 95H55 | 5x2 | 6.0 | 440 | E56 | 6B |
| 9 | 5-Bit Comparator | 10166/10566 | 5x2 | 5.5 | 312 | E42 | 4L,6B,9B |
| 10 | 9-Bit Comparator | 100166 | 9 | _ | <u> </u> | E114 | 4Q,6Q |
| 11 | 8-Input Priority Encoder | 10165/10565 | 8 | 6.0 | 520 | E13 | 4L,6B,9B |
| 12 | Universal Priority Encoder | 100165 | 8 | 3.0 | 540 | E108 | 4Q,6Q |
| 13 | Dual 9-Bit Parity Generator | 100160 | 9x2 | 3.0 | 370 | E109 | 4Q,6Q |
| 14 | 11-Bit Parity Generator | 10170/10570 | 11 | 4.0 | 275 | E60 | 4L,6B |
| 15 | 12-Bit Parity Generator | 10160/10560 | 12 | 4.0 | 240 | E59 | 4L,6B,9B |
| 16 | 8-Bit Shift Matrix | 100158 | 8 | 2.2 | 630 | E102 | 4Q,6Q |

^{*105}XX and 106XX = Military temperature range

CMOS

SSI FUNCTIONS

| Item | Function | DEVICE NO. | Logic/Connection Diagram | Package(s) |
|---------|---------------------|------------|--------------------------|------------|
| NAND Ga | tes | P Samuel S | | |
| 17 | Quad 2-Input NAND | 4011B | C1 | 31,6A,9A |
| 18 | Triple 3-Input NAND | 4023B | C2 | 31,6A,9A |
| 19 | Dual 4-Input NAND | 4012B | C3 | 31,6A,9A |
| 20 | 8-Input NAND | 4068B | C4 | 31,6A,9A |

CMOS

| SSI FUNCTIONS | (Cont'd) |
|---------------|----------|
|---------------|----------|

| Item | Function | DEVICE NO. | Logic/Connection Diagram | Package(s |
|---------|---------------------------------------|--|-----------------------------|-----------|
| NOR G | ates | | | |
| 1 | Quad 2-Input NOR | 4001B | C5 | 31,6A,9A |
| 2 | Triple 3-Input NOR | 4025B | C6 | 31,6A,9A |
| 3 | Dual 4-Input NOR | 4002B | C7 | 31,6A,9A |
| 4 | 8-Input NOR | 4078B | C8 | 31,6A,9A |
| AND G | ates | Control of the Contro | Abmost of Lo | |
| 5 | Quad 2-Input AND | 4081B | C9 | 31,6A,9A |
| 6 | Triple 3-Input AND | 4073B | C87 | 31,6A,9A |
| 7 | Dual 4-Input AND | 4082B | C88 | 31,6A,9A |
| OR Ga | tes | avae | Comparator | |
| 8 | Quad 2-Input OR | 4071B | C10 | 31,6A,9A |
| 9 | Dual 4-Input OR | 4072B | C85 | 31,6A,9A |
| 10 | Triple 3-Input OR | 4075B | C86 | 31,6A,9A |
| Inverte | rs and Buffers | aneon-moror | out Printing Brooder | ala Milit |
| 11 | Hex Inverter | 4069UB | C11 | 31,6A,9A |
| 12 | Hex Inverting Buffer | 4049B | C12 | 4L,6B,9B |
| 13 | Hex Non-Inverting Buffer | 4050B | C13 | 4L,6B,9B |
| 14 | 3-State Hex Inverting Buffer | 40098B | C14 | 4L,6B,9B |
| 15 | 3-State Hex Non-Inverting Buffer | 40097B | C15 | 4L,6B,9B |
| 16 | Quad True/Complement Buffer | 4041B | C81 | 31,6A,9A |
| Comple | ex Gates | | | |
| 17 | Quad Exclusive OR | 4030B | C16 | 31,6A,9A |
| 18 | Quad Exclusive OR | 4070B | C16 | 31,6A,9A |
| 19 | Quad Exclusive NOR | 4077B | C17 | 31,6A,9A |
| 20 | Dual 2-Wide, 2-Input AND-OR-Invert | 4085B | C18 | 31,6A,9A |
| 21 | 4-Wide, 2-Input AND-OR-Invert | 4086B | C19 | 31,6A,9A |
| 22 | Dual Complementary Pair Plus Inverter | 4007UB | C20 | 31,6A,9A |
| Schmit | t Triggers | | Totale number of the Co | |
| 23 | Quad 2-Input NAND Schmitt Trigger | 4093B | C82 | 31,6A,9A |
| 24 | Dual Schmitt Trigger | 4583B | C83 | 4L,6B,9B |
| 25 | Hex Schmitt Trigger | 40014B | C84 | 31,6A,9A |

CMOS

LATCHES/FLIP-FLOPS

| Item | Function | DEVICE NO. | Data Inputs | Common Clear | Enable/Clock Inputs (Level) | Required Enable/Clock Pulse Width-ns (Typ) VDD = 10V | Enable/Clock to Q Delay-ns (Typ) VDD = 10V | Logic/Connection Diagram | Package(s) |
|------|---|------------|-------------|--------------|--------------------------------|--|--|-----------------------------|------------|
| 1 | Dual JK Flip-Flop | 4027B | JK | RS | Н | 35 | 45 | C21 | 4L,6B,9B |
| 2 | Dual D Flip-Flop | 4013B | D | RS | Н | 30 | 38 | C22 | 31,6A,9A |
| 3 | Quad D Flip-Flop | 40175B | D | X | Н | 10 | 35 | C23 | 4L,6B,9B |
| 4 | Quad D Flip-Flop w/3-State Ouptuts | 4076B | D | MR | L | 35 | 35 | C110 | 4L,6B,9B |
| 5 | Hex D Flip-Flop | 40174B | D | X | Н | 10 | 35 | C24 | 4L,6B,9B |
| 6 | 4-Bit Latch | 4042B | D | 2 | Н | 16 | 66 | C25 | 4L,6B,9B |
| 7 | 4-Bit Latch | 4043B | RS | RS | Н | 14 | 30 | C26 | 4L,6B,9B |
| 8 | 4-Bit Latch | 4044B | RS | RS | Н | 14 | 30 | C27 | 4L,6B,9B |
| 9 | Dual 4-Bit Address Latch | 4723B | D | X | L | 20 | 50 | C28 | 4L,6B,9B |
| 10 | 8-Bit Address Latch | 4724B | D | X | L | 20 | 40 | C29 | 4L,6B,9B |
| 11 | BCD-to-7-Seg Latch/Decoder/Dvr | 4511B | D | X | L | 14 | 90 | C111 | 4L,6B,9B |
| 12 | BCD-to-7-Seg Latch/Decoder/Dvr for Liquid Crystal | 4543B | D | Х | Н | 40 | 200 | C112 | 4L,6B,9B |
| 13 | BCD-to-7-Seg Latch/Decoder Dvr w/Ripple Blanking | 4734B | D | X | L | 14 | 90 | C114 | 7D,9M |

MULTIPLEXERS

| Item | Function | DEVICE NO. | Enable Inputs | True Output | Select Delay ns (Typ) V _{DD} = 10V | Enable Delay ns (Typ) V _{DD} = 10V | Data Delay ns (Typ) V _{DD} = 10V | Logic/Connection Diagram | Package(s) |
|------|----------------|------------|---------------|-------------|--|--|--|-----------------------------|------------|
| 14 | Quad 2-Input | 4019B | _ | X | 37 | 100 | 37 | C30 | 4L,6B,9B |
| 15 | Quad 2-Input | 4519B | | X | 50 | | 50 | C31 | 4L,6B,9B |
| 16 | Dual 4-Input | 4539B | X | X | 88 | 53 | 71 | C32 | 4L,6B,9B |
| 17 | Single 8-Input | 4512B | X | 3-State | 85 | 45 | 75 | C33 | 4L,6B,9B |

FAIRCHILD DIGITAL

CMOS

REGISTERS

| Item | Function | DEVICE NO. | No. of Bits | Serial Entry | Parallel Entry No. of Bits | Clock Edge | Max Clock Frequency MHz (Typ) V _{DD} = 10V | Clock To Output Delay-ns (Typ) VDD = 10V | Logic/Connection Diagram | Package(s) |
|------|---|------------|-------------|--------------|---|---------------------|--|--|-----------------------------|------------|
| 1 | Parallel-In/Parallel-Out | 4035B | 4 | JK | 4 | L→H | 17 | 90 | C39 | 4L,6B,9B |
| 2 | Parallel-In/Parallel-Out Bidirectional | 40194B | 4 | D | 4 | L→H | 14 | 45 | C40 | 4L,6B,9B |
| 3 | Parallel-In/Parallel-Out | 40195B | 4 | JK | 4 | L→H | 14 | 45 | C41 | 4L,6B,9B |
| 4 | Serial-In/Parallel-Out | 4015B | 8 | D | - | L→H | 14 | 85 | C42 | 4L,6B,9B |
| 5 | Parallel-In/Serial-Out | 4014B | 8 | D | 8 | L→H | 14.7 | 68 | C43 | 4L,6B,9B |
| 6 | Parallel-In/Serial-Out | 4021B | 8 | D | 8 | L→H | 18.1 | 74 | C44 | 4L,6B,9B |
| 7 | Serial-In/Serial-Out | 4006B | 18 | D | - | H→L | 30 | 37 | C45 | 31,6A,9A |
| 8 | Serial-In/Serial-Out | 4731B | 256 | D | - | H→L | 8.0 | 95 | C46 | 31,6A,9A |
| 9 | Serial-In/Serial-Out | 4031B | 64 | D | - | L→H | 8.0 | 60 | C78 | 4L,6B,9B |
| 10 | Serial-In/Serial-Out Variable | 4557B | 1 to 64 | D | 10 to | 2- H→L or L→H | 10 | 150 | C80 | 4L,6B,9B |
| 11 | Parallel/Serial- Input/Output | 4034B | 8 | D | 8 | L→H | 8.0 | 155 | C79 | 4M,6N,9N |

DECODERS/DEMULTIPLEXERS

| Item | Function | DEVICE NO. | Address Inputs | Active LOW Enable | Output Configuration | Select Delay ns (Typ) V _{DD} = 10V | Enable Delay ns (Typ) V _{DD} = 10V | Logic/Connection Diagram | Package(s) |
|------|---------------------------------|------------|----------------|-------------------|-------------------------|--|--|-----------------------------|-------------|
| 12 | Dual 1-of-4 Decoder | 4555B | 2x2 | 2 | Н | 60 | 60 | C34 | 4L,6B,9B |
| 13 | Dual 1-of-4 Decoder | 4556B | 2x2 | 2 | L | 68 | 58 | C35 | 4L,6B,9B |
| 14 | 1-of-10 Decoder | 4028B | 4 | - | Н | 66 | - | C36 | 4L,6B,9B |
| 15 | 1-of-16 Decoder | 4514B | 4 | 1 | Н | 95 | 95 | C37 | 4M,6N,9N,9U |
| 16 | 1-of-16 Decoder | 4515B | 4 | 1 | L | 95 | 95 | C38 | 4M,6N,9N,9U |
| 17 | Dual 4-Channel Demultiplexer | 4052B | 2 | 1 | Н | 125 | 105 | C64 | 4L,6B,9B |

CMOS

DECODERS/DEMULTIPLEXERS (Cont'd)

| Item | Function | DEVICE NO. | Address Inputs | Active LOW Enable | Output Configuration | Select Delay ns (Typ) V _{DD} = 10V | Enable Delay ns (Typ) V _{DD} = 10V | Logic/Connection Diagram | Package(s) |
|------|---|------------|----------------|-------------------|-------------------------|--|--|-----------------------------|------------|
| 1 | 8-Channel Demultiplexer | 4051B | 3 | 1 | Н | 125 | 105 | C65 | 4L,6B,9B |
| 2 | BCD-to-7-Segment Latch/Decoder/Dvr | 4511B | 4 | 1 | Н | 90 | 98 | C111 | 4L,6B,9B |
| 3 | BCD-to-7-Segment Latch/Decoder/ Dvr for Liquid Crystals | 4543B | 4 | - | H or L | 200 | 200 | C112 | 4L,6B,9B |
| 4 | BCD-to-7-Segment Latch/Decoder/ Dvr w/Ripple Blanking | 4734B | 4 | 1 | Н | 90 | 98 | C114 | 7D,9M |

COUNTERS

| Item | Function | DEVICE NO. | Modulo | Parallel Load ⁽¹⁾ | Clock Transition | Max Clock Rate MHz (Typ) V _{DD} = 10V | Clock to Q Output Delay ns (Typ) V _{DD} = 10V | Logic/Connection Diagram | Package(s) |
|------|-----------------------------|----------------------|--------|------------------------------|------------------|---|--|-----------------------------|------------|
| 5 | 4-Bit Sync Count Up | 40160B | Decade | S | L→H | 12 | 55 | C47 | 4L,6B,9B |
| 6 | 4-Bit Sync Count Up | 40161B | Binary | S | L→H | 12 | 55 | C47 | 4L,6B,9B |
| 7 | 4-Bit Sync Count Up | 40162B | Decade | S | L→H | 12 | 55 | C48 | 4L,6B,9B |
| 8 | 4-Bit Sync Count Up | 40163B | Binary | S | L→H | 12 | 55 | C48 | 4L,6B,9B |
| 9 | 4-Bit Sync Count Down | 4522B ⁽²⁾ | Decade | A | L→H or H→L | 10 | 95 | C49 | 4L,6B,9B |
| 10 | 4-Bit Sync Count Down | 4526B (2) | Binary | A | L→H or H→L | 10 | 95 | C49 | 4L,6B,9B |
| 11 | 4-Bit Sync Count Up/Down | 4510B | Decade | A | L→H | 12 | 62 | C50 | 4L,6B,9B |
| 12 | 4-Bit Sync Count Up/Down | 4516B | Binary | A | L→H | 12 | 62 | C50 | 4L,6B,9B |
| 13 | 4-Bit Sync Count Up/Down | 40192B | Decade | А | L→H | 8.0 | 105 | C51 | 4L,6B,9B |

A = Asynchronous, S = Synchronous
 To be announced

FAIRCHILD DIGITAL

CMOS

COUNTERS (Cont'd)

| Item | Function | DEVICE NO. | Modulo | Parallel Load ⁽¹⁾ | Clock Transition | Max Clock Rate MHz (Typ) V _{DD} = 10V | Clock to Q Output Delay ns (Typ) V _{DD} = 10V | Logic/Connection Diagram | Package(s) |
|------|------------------------------------|----------------------|---------------------|------------------------------|------------------|---|--|-----------------------------|------------|
| 1 | 4-Bit Sync Count Up/Down | 40193B | Binary | Α | L→H | 8.0 | 105 | C51 | 4L,6B,9B |
| 2 | 4-Bit Sync Count Up/Down | 4029B | Decade or Binary | A | L→H | 12 | 62 | C52 | 4L,6B,9B |
| 3 | Dual 4-Bit Sync Count Up | 4518B | Decade | | L→H or H→L | 10 | 95 | C53 | 4L,6B,9B |
| 4 | Dual 4-Bit Synchronous Count Up | 4520B | Binary | - | L→H or H→L | 10 | 95 | C53 | 4L,6B,9B |
| 5 | 7-Bit Ripple Count Up | 4024B | Binary | - | H→L | 30 | 45 | C54 | 31,6A,9A |
| 6 | 12-Bit Ripple Count Up | 4040B | Binary | _ | H→L | 25 | 55 | C55 | 4L,6B,9B |
| 7 | 14-Bit Ripple Count Up | 4020B | Binary | _ | H→L | 25 | 55 | C56 | 4L,6B,9B |
| 8 | 4-Bit Johnson Counter | 4022B ⁽²⁾ | 1-of-8 | - | L→H or H→L | 16 | 95 | C57 | 4L,6B,9B |
| 9 | 5-Bit Johnson Counter | 4017B | 1-of-10 | | L→H or H→L | 13.8 | 114 | C58 | 4L,6B,9B |
| 10 | 5-Bit Johnson Counter | 4018B ⁽²⁾ | 7 3 4 3 | _ | L→H | 10 | 115 | C59 | 4L,6B,9B |
| 11 | Bit Rate Generator | 4702B | 14-Bit Rates | _ | L→H | 6.5 | 40 | C60 | 4L,6B,9B |
| 12 | 21-Stage Binary Counter | 4045B | Binary | | L→H | 25 | 900 | C89 | 31,6A,9A |
| 13 | 24-Stage Binary Counter | 4521B | Binary | | H→L | 12 | 3200 | C90 | 4L,6B,9B |
| 14 | Real Time 5-Decade Counter | 4534B | Decade(x5) | | L→H | 4.5 | 1000 | C91 | 4M,6N,9N |
| 15 | 3-Digit BCD Counter | 4553B | Decade (x3) | - | L→H or H→L | 6.0 | 300 | C92 | 4L,6B,9B |
| 16 | 7-Stage Counter | 4727B | Binary | 1 | L→H | 8.0 | 90 | C93 | 31,6A,9A |
| 17 | 7-Stage Counter | 4737B | Binary | _ | L→H | 8.0 | 90 | C95 | 31,6A,9A |
| 18 | Programmable Timer/Counter | 4722B | Binary | | H→L | 6.0 | 1000 | C94 | 4L,6B,9B |
| 19 | Industrial Time Base Generator | 4566B | Decade | | H→L | 3.2 | 400 | C99 | 4L,6B,9B |

A = Asynchronous, S = Synchronous
 To be announced

CMOS

MONOSTABLES

| | at fig. in | ON | ical Width on (%) = 15V | No. of | Inputs | e | (tpw)-ns = 5.0V | ogic/Connection Diagram | (s) |
|------|--|--------|-------------------------------------|----------|----------|------------|--------------------|----------------------------|------------|
| Item | Function | DEVICE | Typical Pulse Wic Variation (| Positive | Negative | Resettable | Output (1 | Logic/Cc Diag | Package(s) |
| 1 | Dual Retriggerable Resettable Monostable Multivibrator | 4528B | ±3% | 1 | 1 | Х | 300 | C61 | 4L,6B,9B |
| 2 | Low Power Monostable/ Astable Multivibrator | 4047B | Cata Push In | 1 | 1 | X | 10 | C115 | 31,6A,9A |
| 3 | Dual Precision Monostable Multivibrator | 4538B | ±0.5% | 1 | 1 | X | 200 | C116 | 4L,6B,9B |
| 4 | Micro Power Phase Locked Loop | 4046B | Action Action | | G: UG# | - | - | C117 | 4L,6B,9B |

ANALOG DEVICES

| Item | Function | DEVICE NO. | Enable Input | Max ON Resistance-Ω VDD = VIS = 10V | Max OFF State Leakage Current-nA VDD = 10V | Signal Capability V | Logic/Connection Diagram | Package(s) |
|------|---|------------|--------------|--|--|------------------------|-----------------------------|------------|
| 5 | Quad Bilateral Switch | 4016B | X | 840 | 125 | 0-15 ±7.5 | C63 | 31,6A,9A |
| 6 | Quad Bilateral Switch | 4066B | X | 520 | 100 | 0-15 ±7.5 | C63 | 31,6A,9A |
| 7 | Dual 4-Channel Multiplex/Demultiplex | 4052B | × | 600 | 100 | 0-15 ±7.5 | C64 | 4L,6B,9B |
| 8 | 8-Channel Multiplexer/Demultiplexer | 4051B | X | 600 | 100 | 0-15 ±7.5 | C65 | 4L,6B,9B |
| 9 | Triple 2-Channel Multiplex/Demultiplexer | 4053B | X | 600 | 100 | 0-15 ±7.5 | C96 | 4L,6B,9B |
| 10 | 16 Channel Mux/Demux | 4067B | × | 600 | 100 | 0-15 ±7.5 | C97 | 4M,6Q,9U |
| 11 | 4x4 Cross Point Switch | 4741B | X | 840 | 100 | 0-15 ±7.5 | C98 | 4L,6B,9B |

FAIRCHILD DIGITAL

| | THMETIC | | | | | | | | | | | | | | Lo | ISUM | D.Ye |
|------|---------------------------|---------------|-------------|-------|---------|-----------|------------|-------|---------------|---------------|--------------|------------|-------------------|------------------|--|-----------------------------|---------------------------|
| Item | ndt/Senpd%s rungsfd | Function | P.C. P. O. | | pidusti | DEVICE NO | | | D 1916 | | Description | MORE INCO. | | No. of Bits | Logic/Connection Diagram | Package(s) | |
| 1 | Adder | | | | 0 | 4008 | ВВ | 1 | Binar | y Ad | der | | | 4 | C66 | 4L,6 | B,9B |
| 2 | Adder | | COL | | | 4560 | OB | E | BCD | Add | er | 1916 | | 4x2 | C106 | 4L,6 | B,9E |
| 3 | Carry Looka | hea | d | | | 4582 | 2B | (| Carry | Loo | kahe | ad Bl | ock | 4 | C68 | 4L,6 | В,9Е |
| 4 | Comparator | | | | | 4008 | 35B | 1 | Magn | itude | e Cor | npara | itor | 4 | C69 | 4L,6 | B,9E |
| 5 | Data Path S | witc | h | | | 470 | 4B | 1 | Data | Path | Swit | ch | | 4 | C70 | 4M,60 | 2,91 |
| 6 | ArithmeticL | ogic | Regis | ter S | tack | 470 | 5B | 1 | Arith | Logi | c Re | gister | Stack | 4 | C71 | 4M,60 | 2,91 |
| 7 | Data Access | Re | gister | | | 4707 | 7B | 1 | Data | Acce | ess R | egiste | er | 4 | C72 | 4M,60 | 2,91 |
| 8 | Register Un | it | | | | 458 | 18 | | | | meti | | | 4x2 | C108 | 4M,61 | V,9N |
| 9 | Rate Multipl | ier | | | | 4527 | 7B | E | BCD | Rate | Mult | iplier | | 4 | C103 | 4L,6 | B,91 |
| 10 | Parity Check | ker/(| Gener | ator | | 453 | 1B | | 13-In Gene | | | Chec | cker/ | 13 | C104 | 4L,6 | B,91 |
| 11 | Parity Encod | der | 5. I | | | 4532 | 2B | 8 | 3-Inp | ut Pa | arity I | Encod | der | 8 | C105 | 4L,6 | B,91 |
| 12 | Complemen | Complementer | | | | 456 | 1B | 9 | s C | ompl | emer | nter | | 4 | C107 | 31,6 | A,9 |
| 13 | Sequencer | | | AGE C | 6 | 4708 | ВВ | | 10-Bi | | | ocess | or | 10 | C109 | | 61,8 |
| IM | EKEEPING | G C | IRCL | JITS | | | | | | N. | | | | | | | |
| Item | DEVICE NO. ⁽¹⁾ | No. of Digits | Digit Drive | LED | ГСР | Calendar | Backup Osc | Alarm | Timer | 24 Hr Options | Radio Off/On | Voltage | nari dati | Special Features | etalië bar pari Felate S Se Grand | Logic/Connection Diagram | Package(s) ⁽²⁾ |
| 14 | FWA6003/ FWA6103 | 4 | Dir | No | Yes | Yes | Yes | No | No | No | No | 1.5 | Second on con | | date | C119 C118 | B |
| 15 | FWA6005/ FWA6105 | 4 | Dir | No | Yes | Yes | Yes | No | No | No | No | 1.5 | 6003 w voltage | | SECTION AND THE PART OF A | C120 C121 | |
| 16 | FWA6004 | 4 | Mux | Yes | No | Yes | Yes | No | No | No | No | 3.0 | Second car clo | | Charges | C122 | 01 |
| 17 | FWX6107 | 4 | Dir | No | Yes | Yes | Yes | No | No | No | No | 1.5 | 6105 w Europe | | The state of the s | d = | TI, |
| 18 | FWX6109 | 6 | Dir | No | Yes | Yes | Yes | No | No | No | No | 1.5 | 5-funct | ion w/o | day flags | _ | |
| - | | - | - | | - | - | | | town and the | | | | | | | | |

^{1.} FWAXXXX products are available both encapsulated, FWBXXXX, & unencapsulated, FWXXXXX.

19 FWX6111

6 Dir No Yes Yes Yes No No No No 1.5 6-function w/alpha day

^{2.} Consult factory for package type

MOS

RANDOM LOGIC FUNCTIONS (For Other MOS Circuits—See Fairchild Memories)

| Item | Function | DEVICE NO. | Temperature (1) | No. of Pins | Logic/Connection Diagram | Packages(s) ⁽⁴⁾ |
|------|---|----------------------|-----------------|-------------|-----------------------------|----------------------------|
| 1 | TV Sync Generator | 3262A | С | 16 | S1 | 6Z |
| 2 | TV Sync Generator with Generator Lock | 3262B | С | 16 | S2 | 6Z |
| 3 | 8-Channel Multiplex Switch | 3708 | C, L, M | 16 | S3 | 4A,6Z,8K 8U,9B |
| 4 | Digital Voltmeter | 3814 | С | 24 | S4 | 7M |
| 5 | 5-Decade Counter | 3815 | С | 24 | S5 | 7M |
| 6 | Programmable Counter 3 thru 262,145 | 3816 | С | 16 | S6 | 6Z,8K,9B |
| 7 | USART | F3843 | С | 28 | S8 | 8E |
| 8 | Synchronous Protocol Communications Controller | F3846 ⁽³⁾ | С | 40 | Magnet 1 | 100 8 = |

TIMEKEEPING CIRCUITS

| Item | DEVICE NO. | No. of Digits | Digit Drive | LED GE | CCD | Calendar | Backup Osc | Alarm | Timer | 24 Hr Options | Radio Off/On | Voltage | Special Features | Logic/Connection Diagram | Package(s) ⁽⁴⁾ |
|------|------------------------|---------------|-------------|--------|-----|----------|------------|-------|-------|---------------|--------------|---------|--|-----------------------------|---------------------------|
| 9 | FCM7001 | 6 | Mux | Yes | Yes | Yes | Yes | Yes | 9:59 | Yes | Yes | 10-17 | Use for very large digits; high drive circuit. | S9 | TO |
| 10 | FCM7002 | 6 | Mux | Verigo | - | Yes | Yes | Yes | 9:59 | Yes | Yes | 10-17 | BCD outputs | S10 | |
| 11 | FCM7003 | 6 | Mux | Yes | Yes | Yes | Yes | Yes | 9:59 | Yes | Yes | 10-17 | Direct drive for gas discharge | S11 | sil. |
| 12 | FCM7004 | 6 | Mux | Yes | Yes | Yes | Yes | Yes | 9:59 | Yes | Yes | 10-17 | 7001 w/European calendar format | S9 | |
| 13 | FCM7010 | 4 | Dir | Yes | Yes | Yes | Yes | Yes | 2:50 | Yes | Yes | 7.0-17 | 12 mA direct drive, pulsing colon | S12 | |
| 14 | FCM7015 | 4 | Dir | Yes | Yes | Yes | Yes | Yes | 2:50 | Yes | Yes | 7.0-17 | 12 mA direct static drive, colon, slew set | S12 | |
| 15 | FCM7030 ⁽²⁾ | 4 | Dir | Yes | Yes | No | No | Yes | :59 | Yes | Yes | 8.0-18 | Seconds on command, 15 mA drive | S13 | |
| 16 | FCM7040 | 4 | Dup | Yes | No | No | Yes | Yes | 99:59 | Yes | Yes | 7.0-11 | Key BD entry appliance control | S14 | |

- 1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range.
- 2. Replaces FMC3817 for new designs
- 3. To be announced 4. Consult factory for package types.

FAIRCHILD DIGITAL

RTL/CTL

| FAIRCHILD RTL MICROLOGIC AND CT | L COUNTING MICROLOGIC ELEMENTS |
|---------------------------------|--------------------------------|
|---------------------------------|--------------------------------|

| Item | DEVICE NO. | Description | Logic/Connection Diagram Item DEVICE NO. Description | | Description | Logic/Connection Diagram | Package(s) | | |
|------|---------------|-----------------|--|-------|-------------|-----------------------------|-----------------|-----|-------|
| 38.1 | 900 | Buffer | F8 | 3F,5B | 14 | 913 | D Flip-Flop | F6 | 3F,5B |
| 2 | 901 | Counter Adapter | F18 | 3F,5B | 15 | 914 | Dual 2-NOR | F13 | 3F,5B |
| 3 | 902 | Flip-Flop | F19 | 3F,5B | 16 | 915 | Dual 3-NOR | F14 | 3F,5F |
| 4 | 903 | 3-Input NOR | F9 | 3F,5B | 17 | 921 | Dual 2-Expander | F7 | 3F,5B |
| 5 | 904 | Half Adder | F10 | 3F,5B | 18 | 923 | JK Flip-Flop | F15 | 5B |
| 6 | 905 | Half Shift | F11 | 3F,5B | 19 | 926 | JK Flip-Flop | F16 | 3F,5F |
| 7 | 906 | Half Shift | F20 | 3F,5B | 20 | 927 | Quad Inverter | F17 | 3F,5F |
| 8 | 907 | 4-Input NOR | F12 | 3F,5B | 21 | 958 | Decade Counter | F21 | 5B,6A |
| 9 | 908 | Adder | F1 | 3F,5B | 22 | 959 | 4-Bit Latch | F22 | 6B |
| 10 | 909 | Buffer | F2 | 3F,5B | 23 | 960 | BCD Decoder/Dvr | F23 | 6B |
| 11 | 910 | Dual 2-NOR | F3 | 3F,5B | 24 | 974 | JK Flip-Flop | F15 | 5B |
| 12 | 911 | 4-Input NOR | F4 | 3F,5B | 25 | 989 | Binary Counter | F21 | 5B,6A |
| 13 | 912 | Half Adder | F5 | 3F,5B | | 0 | | | |

DTL

DTL MICROLOGIC

| Item | DEVICE NO. | Description | Logic/Connection Diagram | Package(s) | |
|------|------------|--|-----------------------------|-------------|--|
| 26 | 930 | Dual 4-Input Extendable NAND Gate | G1 | 31,5F,6A,9A | |
| 27 | 932 | Dual 4-Input Extendable NAND Buffer Gate | G1 | 31,5F,6A,9A | |
| 28 | 933 | Extender | G9 | 5F,9A | |
| 29 | 935 | Extendable Hex Inverter | G12 | 31,6A,9A | |
| 30 | 936 | Hex Inverter | G12 | 31,6A,9A | |
| 31 | 937 | Hex Inverter | G12 | 31,6A,9A | |
| 32 | 941 | Monostable Multivibrator | G17 | 31,6A | |
| 33 | 944 | Dual 4-Input Extendable NAND Buffer Gate (Open Collector) | G1 | 31,5F,6A,9A | |
| 34 | 945 | RS Flip-Flop | G18 | 31,5F,6A,9A | |
| 35 | 946 | Quad 2-Input NAND Gate | G10 | 31,5F,6A,9A | |

FAIRCHILD DIGITAL

DTL

DTL MICROLOGIC (Cont'd)

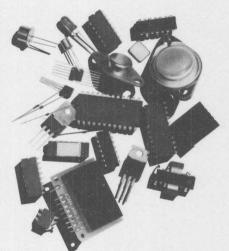
| Item | DEVICE NO. | Description | Logic/Connection Diagram | Package(s) | | | |
|------|------------|-----------------------------------|-----------------------------|-------------|--|--|--|
| 1 | 948 | RS Flip-Flop | G18 | 31,5F,6A,9A | | | |
| 2 | 949 | Quad 2-Input NAND Gate | G10 | 31,5F,6A,9A | | | |
| 3 | 950 | A-C Coupled RS Flip-Flop | G19 | 31,5F,6A,9A | | | |
| 4 | 951 | Monostable Multivibrator | e Multivibrator G17 | | | | |
| 5 | 961 | Dual 4-Input Extendable NAND Gate | put Extendable NAND Gate G1 | | | | |
| 6 | 962 | Triple 3-Input NAND Gate | put NAND Gate G11 | | | | |
| 7 | 963 | Triple 3-Input NAND Gate | G11 | | | | |
| 8 | 1800 | Dual 5-Input NAND Gate | Gate G1 | | | | |
| 9 | 1801 | Dual 5-Input NAND Gate | NAND Gate G1 | | | | |
| 10 | 1802 | Single 8-Input NAND Gate | ND Gate G2 | | | | |
| 11 | 1803 | Single 8-Input NAND Gate | | | | | |
| 12 | 1804 | Single 10-Input NAND Gate | | | | | |
| 13 | 1805 | Single 10-Input NAND Gate | 10-Input NAND Gate G3 | | | | |
| 14 | 1806 | Quad 2-Input AND Gate | 2-Input AND Gate G4 | | | | |
| 15 | 1807 | Quad 2-Input AND Gate | nput AND Gate G4 | | | | |
| 16 | 1808 | Quad 2-Input OR Gate | ad 2-Input OR Gate G5 | | | | |
| 17 | 1809 | Quad 2-Input OR Gate | G5 | 9/ | | | |
| 18 | 1810 | Quad 2-Input NOR Gate | | | | | |
| 19 | 1811 | Quad 2-Input NOR Gate | G6 | 9/ | | | |
| 20 | 1812 | Quad 2-Input Exclusive OR Gate | G7 | 9/ | | | |
| 21 | 1813 | Quad Latch | G13 | 98 | | | |
| 22 | 1814 | Quad Latch | G14 | 9/ | | | |
| 23 | 9093 | Dual JK Flip-Flop | G15 | 31,6A,9A | | | |
| 24 | 9094 | Dual JK Flip-Flop | G15 | 31,6A,9A | | | |
| 25 | 9097 | Dual JK Flip-Flop | G16 | 31,6A,9A | | | |
| 26 | 9099 | Dual JK Flip-Flop | G16 | 31,6A,9A | | | |
| 27 | 9109 | High Voltage Hex Inverter | G12 | 64 | | | |
| 28 | 9110 | High Voltage Hex Inverter | G12 | 64 | | | |
| 29 | 9111 | RS Flip-Flop | RS Flip-Flop G20 | | | | |
| 30 | 9112 | High Voltage Hex Inverter | | | | | |
| 31 | 9135 | Hex Inverter (Open Collector) | G12 | 31,6A,9A | | | |
| 32 | 9157 | Quad 2-Input Buffered NAND Gate | G8 | 31,6A,9A | | | |
| 33 | 9158 | Quad 2-Input Power NAND Gate | G8 | 6A,9A | | | |

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DETERMICEOLOGIC (OMIN)

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RANDOM ACCESS MEMORIES

BIPOLAR RAMs

| | JLAR I | | schijf desed ami't olog | ime | Lyp) | | /Write Time | | | |
|------|--------------|-----------------------------|----------------------------|------------------------------|-------------------------------------|----------------------------------|-----------------------------|-------------------------------|-----------------------------|------------|
| Item | Organization | DEVICE NO. | Description ⁽¹⁾ | Address Access Time ns (Typ) | Chip Select Access Time ns (Typ) | Comm 0°C to +70°C ns (Max) | -55°C to +125°C ns (Max) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
| TTL | | | | | | | | | | JITT |
| 801 | 16x4 | 54LS/74LS89 ⁽⁴⁾ | ОС | 1 | | _ | 85- | | M1 | 4L,7B,9B |
| 2 | 16x4 | 54LS/74LS189 ⁽⁴⁾ | 38 | - | - | _ | 28- | _ | M1 | 4L,7B,9B |
| 3 | 16x4 | 54LS/74LS289 ⁽⁴⁾ | ОС | - | _ | - | 88- | - | M1 | 7B,9B |
| 4 | 16x4 | 7489 | ОС | 30 | 30 | 60/55 | 60/55 | - | M1 | 4L,7B,9B |
| 5 | 16x4 | 9410 | 38 | 35 | 25 | 50 ⁽²⁾ | 28- | 375 | M50 | 7D,9M |
| 6 | 256x1 | 93410 | ОС | 45 | 25 | 60/45 | 70/55 | 450 | M2 | 4B,6F,9B |
| 7 | 256x1 | 93410A | ОС | 35 | 20 | 45 | _ | 450 | M2 | 6D,9B |
| 8 | 256x1 | 93411 | ОС | 45 | 25 | 55/45 | 65/55 | 475 | МЗ | 4B,6D,9B |
| 9 | 256x1 | 93411A | ОС | 40 | 25 | 45 | _ | 475 | МЗ | 6D,9B |
| 10 | 256x1 | 93L420 | 38 | 40 | 20 | 45 | 55 | 250 | МЗ | 4B,6D,9B |
| 11 | 256x1 | 93L421 | 3S | 45 | 30 | 90/75 | 100/90 | 275 | МЗ | 4B,6D,9B |
| 12 | 256x1 | 93421 | 3S | 35 | 20 | 50/35 | 60/45 | 475 | МЗ | 4B,6D,9B |
| 13 | 256x1 | 93421A | 3S | 30 | 20 | 40/35 | _ | 475 | МЗ | 6D,9B |
| 14 | 64x9 | 93419 | ОС | 35 | 15 | 45 | 60 | 725 | M4 | 7Y |
| 15 | 256x4 | 93412 | ОС | 30 | 20 | 45 | 60/55 | 475 | M5 | 4K,4R,8T |
| 16 | 256x4 | 93L412 | ОС | 45 | 20 | 60 | 75/70 | 250 | M5 | 4K,4R,8T |
| 17 | 256x4 | 93422 | 3S | 30 | 20 | 45 | 60/55 | 475 | M5 | 4K,4R,8T |
| 18 | 256x4 | 93L422 | 3S | 45 | 20 | 60 | 75/70 | 250 | M5 | 4K,4R,8T |
| 19 | 1024x1 | 93415 | ОС | 30 | 15 | 45 | 60 | 475 | M6 | 4B,6D,9B |
| 20 | 1024x1 | 93L415 | ОС | 35 | 20 | 60 | 70 | 200 | M6 | 4B,6D,9B |
| 21 | 1024x1 | 93415A | ОС | 25 | 15 | 30 | | 475 | M6 | 6D,9B |

^{1.} OC = open collector, 3S = 3-state

^{2.} Measured @ T_A = 25°C

^{3.} Typical Data In to Match Out

^{4.} To be announced

FAIRCHILD MEMORIES

RANDOM ACCESS MEMORIES

| DIFULAN NAMES (COME | LAR RAMs (Cont'd) | AMs | 3 | LA | 0 | P | BI | |
|---------------------|-------------------|-----|---|----|---|---|----|--|
|---------------------|-------------------|-----|---|----|---|---|----|--|

| | | | entit sige | Time | Тур) | Read/\ Cycle | Write Time | _ | _ | |
|------|-------------------------|------------|----------------------------|------------------|-------------------------------------|--------------------------|-----------------------------|-------------------------------|-----------------------------|------------|
| Item | Organization DEVICE NO. | DEVICE NO. | Description ⁽¹⁾ | Address Access 7 | Chip Select Access Time ns (Typ) | 0°C to +70°C ns (Max) | -55°C to +125°C ns (Max) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
| TTL | | | | | | | | | | JIT. |
| 1 | 1024x1 | 93425 | 3S | 30 | 15 | 45 | 60 | 475 | M6 | 4B,6D,9B |
| 2 | 1024x1 | 93L425 | 38 | 35 | 20 | 60 | 70 | 200 | M6 | 4B,6D,9B |
| 3 | 1024x1 | 93425A | 38 | 25 | 15 | 30 | 10_ | 475 | M6 | 6D,9B |
| 4 | 4096x1 | 93470 | ос | 30 | 15 | 50/55 | 60/70 | 800 | M15 | 7D,9M |
| 5 | 4096x1 | 93471 | 38 | 30 | 15 | 50/55 | 60/70 | 800 | M15 | 7D,9M |
| 6 | 4096x1 | 93481 | Dynamic, 3S | 90 | 35 | 120 | 30 50 | 45/350 | M16 | 4B,6E,9B |
| 7 | 4096x1 | 93481A | Dynamic, 3S | 80 | 35 | 100 | 50L | 45/350 | M16 | 4B,6E,9B |
| ECL | | | | | | | | | | KOES THE |
| 8 | 4x4 | 100142 | | 2.7 | _ | 3.3(3) | _ | 730 | M40 | 4Q,6Q |
| 9 | 16x4 | 95400 | US NO. | 14 | 6.5 | 17.5/25.5 | (2) | 435 | M13 | 6B |
| 10 | 16x4 | 10145A | | 6.5 | 4.5 | 9.0/10(2) | _ | 500 | M14 | 4L,6B,9B |
| 11 | 16x4 | 100145A | | 4.8 | _ | - | _ | 765 | M41 | 4Q,6Q |
| 12 | 128x1 | 10405 | | 12 | 5.0 | 15 ⁽²⁾ | | 475 | M7 | 4B,6D |
| 13 | 256x1 | 10410 | | 18 | 7.0 | 30/38(2) | _ | 475 | M8 | 4B,6D,9B |
| 14 | 256x1 | 10411 | 41000 | 20 | 7.0 | 35/47(2) | _ | 360 | M8 | 6D,9B |
| 15 | 256x1 | 10414 | 00100 | 7.0 | 4.0 | - | _ | 450 | M8 | 4B,6D |
| 16 | 256x1 | 100414 | | 7.0 | 4.0 | | - | 500 | M8 | 4B,6D |
| 17 | 1024x1 | 10415 | | 25 | 7.0 | 35/38(2) | _ | 475 | M9 | 4B,6D |
| 18 | 1024x1 | 10415A | | 12 | 5.0 | 20/27(2) | | 475 | M9 | 4B,6D |
| 19 | 1024x1 | 100415 | | 12 | 5.0 | 20/30 ⁽²⁾ | - | 500 | M9 | 4Q |
| 20 | 4096x1 | 10470 | _ | 25 | 10 | _ | | 900 | M15 | 7D |

^{1.} OC = open collector, 3S = 3-state

^{2.} Measured @ T_A = 25°C

^{3.} Typical Data In to Match Out

^{4.} To be announced

RANDOM ACCESS MEMORIES

MOS/CMOS RAMS

| Item | Organization | DEVICE NO. | Description | Access Time ns (Max) | Cycle Time ns (Min) | Power Dissipation mW (Max) | Temperature ⁽¹⁾ | No. of Pins | Logic/Connection Diagram | Package(s) |
|------|--------------|-------------|-------------|-------------------------|------------------------|--|----------------------------|-------------|-----------------------------|-------------|
| MOS | | | | | | | | | | 209 |
| 1 | 1024x1 | 21L02H | Static | 250 | 250 | 158/24 (4) | С | 16 | M22 | 6Z,8K,8U,9B |
| 2 | 1024x1 | 21L02F | Static | 350 | 350 | 158/24 (4) | С | 16 | M22 | 6Z,8K,8U,9B |
| 3 | 1024x1 | 21L021 | Static | 450 | 450 | 158/24(4) | С | 16 | M22 | 6Z,8K,8U,9B |
| 4 | 1024x1 | 21L022 | Static | 650 | 650 | 158/24 ⁽⁴⁾ | C | 16 | M22 | 6Z,8K,8U,9B |
| 5 | 1024x1 | 2102LH | Static | 250 | 250 | 158 ⁽²⁾ /220 ⁽³⁾ | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 6 | 1024x1 | 2102LF | Static | 350 | 350 | 158 ⁽²⁾ /220 ⁽³⁾ | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 7 | 1024x1 | 2102L1 | Static | 450 | 450 | 158(2)/220(3) | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 8 | 1024x1 | 2102L2 | Static | 650 | 650 | 158(2)/220(3) | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 9 | 1024x1 | 2102H | Static | 250 | 250 | 289 ⁽²⁾ /385 ⁽³⁾ | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 10 | 1024x1 | 2102F | Static | 350 | *350 | 289(2)/385(3) | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 11 | 1024x1 | 21021 | Static | 450 | 450 | 289 (2)/385(3) | Ċ,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 12 | 1024x1 | 21022 | Static | 650 | 650 | 289 ⁽²⁾ /385 ⁽³⁾ | C,L,M | 16 | M22 | 6Z,8K,8U,9B |
| 13 | 1024x1 | 3542/2102S | Static | 150 | 150 | 289 | С | 16 | M22 | 6Z,8K,8U,9B |
| 14 | 1024x1 | 3542A/2102R | Static | 200 | 200 | 289 | С | 16 | M22 | 6Z,8K,8U,9B |
| 15 | 256x8 | 3539 | Static | 650 | 650 | 500 | С | 22 | M23 | 6V |
| 16 | 256x8 | 35392 | Static | 500 | 500 | 500 | С | 22 | M23 | 6V |

- 1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range
- 2. Commercial temperature range
- 3. Military and limited military temperature range
- 4. Standby power
- 5. To be announced
- 6. Typical value @ VDD = 10V

FAIRCHILD MEMORIES

RANDOM ACCESS MEMORIES

| MOS/CMOS RAMs |
|---------------|
|---------------|

| Item | Organization | DEVICE NO. | Description | Access Time ns (Max) | Cycle Time ns (Min) | Power Dissipation mW (Max) | Temperature (1) | No. of Pins | Logic/Connection Diagram | Package(s) |
|------|--------------|----------------------|-------------|-------------------------|------------------------|-------------------------------|-----------------|-------------|-----------------------------|-------------|
| MOS | | | | | | | | | | 2014 |
| 810 | 1024x4 | F2114 ⁽⁷⁾ | Static | 200 | 200 | 350 | С | 18 | M24 | 4801 |
| 2 | 4096x1 | M40272 | Dynamic | 150 | 320 | 470/36(4) | C,L | 16 | M25 | 8K,8R |
| 3 | 4096x1 | M40273 | Dynamic | 200 | 375 | 470/36 ⁽⁴⁾ | C,L | 16 | M25 | 8K,8R |
| 4 | 4096x1 | M40274 | Dynamic | 250 | 375 | 470/36 ⁽⁴⁾ | C,L | 16 | M25 | 8K,8R |
| 5 | 4096x1 | M40275 | Dynamic | 300 | 430 | 470/36(4) | C,L | 16 | M25 | 8K,8R |
| 6 | 16,384x1 | F16K3 | Dynamic | 200 | 375 | 465/20 ⁽⁴⁾ | С | 16 | M26 | 6Z,8K,8R |
| 7 | 16,384x1 | F16K4 | Dynamic | 250 | 410 | 465/20 ⁽⁴⁾ | С | 16 | M26 | 6Z,8K,8R |
| 8 | 16,384x1 | F16K5 | Dynamic | 300 | 500 | 465/20(4) | С | 16 | M26 | 6Z,8K,8R |
| СМО | S | 14 81 1 | LO PAR | (E)ges] | teas [| nes gine | | HIS | igis T | 1001 |
| 9 | 16x4 | 4710B | Static | 95(6) | 1280 | 0.4 | C,M | 18 | M42 | 7D,9M |
| 10 | 16x4 | 4725B | Static | 100 ⁽⁶⁾ | 68 <u>1</u> | 0.4 | C,M | 16 | M43 | 4L,6B,9B |
| 11 | 256x1 | 4720B | Static | 95 ⁽⁶⁾ | | 0.4 | C,M | 16 | M44 | 4L,6B,9B |
| 12 | 256x4 | 4721B | Static | 240(6) | 082 | 0.7 | C,M | 22 | M45 | 4K,4M,6V,7I |
| 13 | 1024x1 | 4736B ⁽⁵⁾ | Static | 320(6) | 200 | 0.7 | C,M | 16 | M46 | 4L,6B,9B |

 $^{1. \} C = Commercial\ temperature\ range; \ L = Limited\ military\ temperature\ range; \ M = Military\ temperature\ range$

^{2.} Commercial temperature range

^{3.} Military and limited military temperature range

^{4.} Standby power

^{5.} To be announced

^{6.} Typical value @ V_{DD} = 10V

^{7.} Consult factory for package information

READ ONLY MEMORIES

PIDOLAD DOME AND DROME

| | | | | ine | | Read Cy | cle Time | | | |
|------|--------------|------------|----------------------------|---------------------------------|--|--------------------------|-----------------------------|-------------------------------|-----------------------------|-------------|
| Item | Organization | DEVICE NO. | Description ⁽¹⁾ | Address Access Time ns (Typ) | Chip Select Access Time ns (Typ) | 0°C to +70°C ns (Max) | -55°C to +125°C ns (Max) | Power Dissipation mW (Typ) | Logic/Connection Diagram | Package(s) |
| TTL | | 1 1 | | | | | | | | |
| 1 | 16x48x8 | 93458 | FPLA,OC | 25 | 15 | | | 750 | M20 | 8E,9Y |
| 2 | 16x48x8 | 93459 | FPLA,3S | 25 | 15 | 1018 (879) | W HIRES | 750 | M20 | 8E,9Y |
| 3 | 256x4 | 93457 | ROM,OC | 25 | 12 | 45 | 60 | 425 | M17 | 3D,6D,9B |
| 4 | 256x4 | 93467 | ROM,3S | 25 | 12 | 45 | 60 | 425 | M17 | 3D,6D,9B |
| 5 | 256x4 | 93417 | PROM,OC | 25 | 12 | 45 | 60 | 425 | M17 | 3D,6D,9B |
| 6 | 256x4 | 93427 | PROM,3S | 25 | 12 | 45 | 60 | 425 | M17 | 3D,6D,9B |
| 7 | 512x4 | 93436 | PROM,OC | 30 | 15 | 50 | 60 | 475 | M10 | 3D,6D,9B |
| 8 | 512x4 | 93446 | PROM,3S | 30 | 15 | 50 | 60 | 475 | M10 | 3D,6D,9B |
| 9 | 512x4 | 93431 | ROM,OC | 30 | 15 | 50 | 60 | 475 | M10 | 4B,6D,9B |
| 10 | 512x4 | 93441 | ROM,3S | 30 | 15 | 50 | 60 | 475 | M10 | 4B,6D,9B |
| 11 | 512x8 | 93432 | ROM,OC | 35 | 15 | 55 | 70 | 650 | M11 | 4R,6M,7L,9N |
| 12 | 512x8 | 93442 | ROM,3S | 35 | 15 | 55 | 70 | 650 | M11 | 4R,6M,7L,9N |
| 13 | 512x8 | 93438 | PROM,OC | 35 | 15 | 55 | 70 | 650 | M11 | 4R,6M,7L,9N |
| 14 | 512x8 | 93448 | PROM,3S | 35 | 15 | 55 | 70 | 650 | M11 | 4R,6M,7L,9N |
| 15 | 1024x4 | 93452 | PROM,OC | 30 | 15 | 55 | 70 | 650 | M18 | 8F,9M |
| 16 | 1024x4 | 93453 | PROM,3S | 30 | 15 | 55 | 70 | 650 | M18 | 8F,9M |
| 17 | 1024x8 | 93450 | PROM,OC | 30 | 20 | 45 | 60 | 550 | M21 | 4R,6M,9N |
| 18 | 1024x8 | 93451 | PROM,3S | 30 | 20 | 45 | 60 | 550 | M21 | 4R,7L,9N |
| 19 | 1024x8 | 93454 | ROM,OC | 30 | 20 | 45 | 60 | 550 | M12 | 4R,6M,7L,9N |
| 20 | 1024x8 | 93464 | ROM,3S | 30 | 20 | 45 | 60 | 550 | M12 | 4R,6M,7L,9N |
| ECL | | | | | | | | | | |
| 21 | 256x4 | 10416 | PROM | 15 | 4.0 | 25(2) | | 650 | M19 | 4B,6D |
| 22 | 256x4 | 100416 | PROM | 15 | 4.0 | 25 (2) | | 650 | M19 | 4B,6D |

OC = open collector, 3S = 3-state
 -30°C to +85°C

FAIRCHILD MEMORIES

READ ONLY MEMORIES

MOS/CMOS ROMS, EPROMS AND CHARACTER GENERATORS

| Item | Organization | DEVICE NO. | Description | Access Time ns (Max) | Power Dissipation mW (Max) | Temperature (1) | No. of Pins | Logic/Connection Diagram | Package(s) |
|------|--------------|------------|---------------------|-------------------------|-------------------------------|-----------------|-------------|-----------------------------|------------|
| MOS | | | | | | | | | |
| 1 | 64x5x7 | 3257 | Character Generator | 1000 | 715 | С | 24 | M28 | 7M |
| 2 | 64x7x5 | 3258 | Character Generator | 800 | 500 | С | 16 | M29 | 6Z |
| 3 | 64x9x7 | 3260 | Character Generator | 1000 | 660 | С | 24 | M30 | 7M |
| 4 | 512x8 | 35141 | ROM | 850 | 580 | С | 24 | M33 | 7M |
| 5 | 512x8 | 35142 | ROM | 1000 | 580 | С | 24 | M33 | 7M |
| 6 | 512x8 | 35151 | ROM | 600 | 510 | С | 24 | M33 | 7M |
| 7 | 512x8 | 35152 | ROM | 700 | 510 | С | 24 | M33 | 7M |
| 8 | 1024x8 | F2708 | EPROM | 450 | 800 | C,L,M | 24 | M31 | QA |
| 9 | 1024x8 | F27081 | EPROM | 350 | 800 | C,L | 24 | M31 | QA |
| 10 | 1024x8 | F3508 | ROM | 450 | 330 | С | 24 | M32 | 7M |
| 11 | 2048x8 | F3516E | ROM | 450 | 330 | С | 24 | M34 | 7M |
| СМО | S | | | | | | | | |
| 12 | 256x8 | 4735B | ROM | 152(3) | 0.7(3) | C,M | 24 | M47 | 4M,6Q,9U |

^{1.} C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range

^{2.} To be announced

^{3.} Typical value at V_{DD} = 10V

SERIAL MEMORY

FIFOs, LIFOs AND SHIFT REGISTERS

| Item | Organization | DEVICE NO. | Description | Frequency MHz (Max) | Power Dissipation mW (Max) | Temperature ⁽¹⁾ | No. of Pins | Logic/Connection Diagram | Package(s) |
|------|--------------|------------|----------------------------|------------------------|-------------------------------|----------------------------|-------------|-----------------------------|------------|
| MOS | | | | | | | | | |
| 1. | 32x6 | 3348 | Static Shift Register | 1.0 | 150 | С | 24 | M36 | 7M |
| 2 | 32x6 | 3349 | Static Shift Register | 1.0 | 150 | С | 16 | M37 | 6Z,8K,9B |
| 3 | 64x4 | 3341 | FIFO | 0.7 | 450/625 ⁽²⁾ | C,L,M | 16 | M38 | 6Z,8K |
| 4 | 64x4 | 3341A | FIFO | 1.0 | 450 | С | 16 | M38 | 6Z,8K |
| 5 | 64x4 | 3342 | Static Shift Register | 1.5 | 380 | С | 16 | M35 | 6Z,8K,9B |
| 6 | 80x4 | 3347 | Static Shift Register | 1.5 | 380 | С | 16 | M35 | 6Z,8K,9B |
| 7 | 80x4 | 33571 | Static Shift Register | 4.0 | 375 | С | 16 | M35 | 6Z |
| 8 | 80x4 | 33572 | Static Shift Register | 2.0 | 285 | С | 16 | M35 | 6Z |
| 9 | 40x9 | 33511 | FIFO | 2.0 | 420 | С | 28 | M39 | 8E |
| 10 | 40x9 | 35512 | FIFO | 1.0 | 520 | C,L,M | 28 | M39 | 8E |
| 11 | 16x4Kx1 | F464-2 | CCD Dynamic Shift Register | 1.0-5.0 | 336/66 (3) | С | 16 | M27 | QB |
| 12 | 16x4Kx1 | F464-3 | CCD Dynamic Shift Register | 1.0-4.0 | 336/66(3) | С | 16 | M27 | QB |
| 13. | 16x4Kx1 | F464-4 | CCD Dynamic Shift Register | 1.0-2.0 | 336/66(3) | С | 16 | M27 | QB |
| СМС | S | | | | | | | | |
| 14 | 16x4 | 4703B | FIFO | 5.3 | 0.5 | C,M | 24 | M48 | 4M,6Q,9U |
| 15 | 16x4 | 4706B | LIFO | 5.3 | 0.5 | C,M | 24 | M49 | 4M,6Q,9U |
| TTL | | | | | | | | | |
| 16 | 16x4 | 9403 | FIFO | 10 | 850 | C,M | 24 | M51 | 6Q,9U |
| 17 | 16x4 | 9406 | LIFO | 10 | 800 | C,M | 24 | M52 | 6Q,9U |

^{1.} C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range

^{2.} Military and limited military temperature range

^{3.} Standby power

^{4.} Minimum frequency specification

YOPERAN LANGER

C < Commercial Semigrature rapps 1 = 1 miner military temporates range; M < Military temporature range

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notherwise transport automité :

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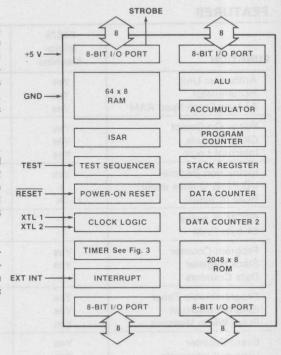
MICROMACHINE™ SERIES

MICROMACHINE™

MicroMachine™ devices are complete 8-bit microcomputers on single MOS integrated circuits. The family can execute the F8 instruction set of more than 70 commands, allowing expansion into multi-chip configurations with software compatibility. The devices feature read only memory, 64 bytes of scratchpad RAM, a programmable binary timer, 32 bits of I/O, and a single +5 V power supply requirement.

Members of the family differ in memory type and size. The F3870 has 2048 bytes of mask programmed ROM while the F38E70 has 2048 bytes of PROM. The F3872 has 3K bytes of masked ROM plus 64 bytes of RAM. The additional RAM is addressed from the program and data counters, not the ISAR. The F3874 contains 4096 bytes of masked programmed ROM.

Utilizing ion-implanted, n-channel silicon-gate technology and advanced circuit design techniques, Fair-child's single-chip microcomputers offer maximum cost effectiveness in a wide range of control and logic replacement applications.



DEVELOPMENT SUPPORT

The Formulator family of development equipment supports the F3870, the one-chip micromachine manufactured by Fairchild. The Formulator Operating System, Utility Programs, and the Fairbug Monitor are totally compatible with the F3870, since it shares the same instruction set with the Formulator. A Simulation (Quad I/O) Module and an In-Circuit Emulation (ICE) cable are available to extend the Formulator features to the user's prototype or production breadboard. This creates a powerful design tool for creating the user's own F3870 software. In addition, the F3870 Emulator, a single stand-alone module for emulating the final F3870 software in PROMs, is available for building prototype systems.

F3870 SIMULATION

The non-microprocessor elements of the user's hard-ware configuration can be assembled on a breadboard and connected to Mark I, II, IIFD, III or IIIFD via the ICE cable plugged into a 40-pin socket on the user's board.

The cable connector on the Processor Module in the Formulator provides I/O ports 0 and 1, while the Simulation (Quad I/O) Module provides I/O ports 4 and 5. This system provides real-world simulation of the user's components in their actual environment with the vital microprocessor signals, including the complete software debugging features of the Formulator, cabled to the external breadboard.

F3870 EMULATOR

After F3870 ROM codes are frozen, a smaller, easier-to-handle and less expensive tool is required. To accomplish this design-in task, Fairchild has developed the F3870 Emulator. The F3870 Emulator contains sockets for two 2708s or two 2716 EROMs in place of the F3870 on-chip ROM so ROM codes can be verified and easily changed. The F3870 Emulator plugs directly into the F3870 40-pin socket in the production prototype using a short Emulator cable. The printed circuit module is approximately 5" by 7".

FAIRCHILD MICROCOMPUTERS

MICROMACHINE™ SERIES

FEATURES

| FUNCTION | F3870 | F38E70* | F3872* | F3874* |
|---|----------------------|------------------|------------------|-----------------------------|
| | Micro- | Micro- | Micro- | Micro- |
| | Machine | Machine | Machine | Machine |
| Arithmetic Unit Accumulator 64-byte Scratchpad RAM | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes |
| Power On Detect Clock Circuits Interrupt Logic | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes |
| | Yes | Yes | Yes | Yes |
| Instruction Register I/O Ports (8 lines each) ROM (K bytes) | Yes 4 2K | Yes 4 | Yes 4 3K | Yes 4 4K |
| EROM (K bytes) 64-byte RAM | No Tank | 2K — | Yes | on anemiose boxesar to t |
| Program Counter | Yes | Yes | Yes | Yes |
| Stack Register | Yes | Yes | Yes | Yes |
| Data Counters | 2 | 2 | 2 | 2 |
| Programmable Timer | Yes | Yes | Yes | Yes |
| External Interrupt | Yes | Yes | Yes | Yes |
| Pulse Width Measure | Yes | Yes | Yes | Yes |
| Event Counter | Yes | Yes | Yes | Yes |
| Vectured Interrupts | Yes | Yes | Yes | Yes |
| +5V required | Yes | Yes | Yes | Yes |
| Power mW (Typ) | 275 | 325 | 310 | 285 |
| Maximum # in system | tolisma finalege and | gildet ets notin | no teo Etrang Ma | s. smeig 1 19 1 |
| Logic/Connection Diagram | P9 | P9 | P9 | P9 |
| Package(s) | 6I,8P | mis status (300m | 6I,8P | 61,8P |

^{*}To be announced

Note: The F3872 has an optional power down feature that allows the 64 byte RAM to be saved with a ± 2 V. Supply that will dissipate 2.5 mW. Two I/O port pins are traded for this function.

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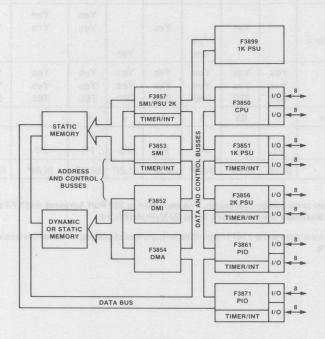
MICROCOMPUTER TRAINING COURSES

Fairchild offers training courses which are aimed at the design engineer who must learn to design the microprocessor into a working system. Both software (instruction sets) and hardware related instruction is given. Emphasis is placed on "hands-on" instruction with microprocessor development systems.

To achieve this understanding, the courses cover the details of I/O ports, use of subroutines and interrupts, where and how the ROM and RAMs are attached to the CPU and how to interface with static or dynamic memories.

Two separate four day courses are offered. One covers the F8 device family and the Micromachine series hardware and software design. The other course covers the F6800 device family in the same manner. An optional fifth day allows instruction in the alternate microprocessor.

F8 MICROPROCESSOR FAMILY



F8 MICROPROCESSOR FAMILY

FEATURES

| FUNCTION | F3850 CPU | F3851 PSU | F3852 DMI | F3853 SMI | F3854 DMA | F3856 PSU | F3857 PSU/SMI | F3861 PIO | F3871 PIO | F3899 ROM |
|---|-------------------|-------------------|----------------------|------------------------------|--------------------------|-------------------|---------------------------|----------------------|-------------------|--------------------------|
| Arithmetic Unit Accumulator 64-byte Scratchpad RAM | Yes Yes Yes | ISINE SI | 312303 H3 3401 H3 | er sesse trus mo | Oral da Sustan | d mat | eya anahak mkri" na ba | e a cana calco ai | teadge feadge | 3 1944 |
| Power on Detect Clock Circuits Interrupt Logic | Yes Yes Yes | Yes | HE USC | Yes | seviju z odalosti | Yes | Yes | Yes | Yes | embero Emere Manes |
| Instruction Register I/O Ports (8 lines each) ROM (K bytes) | Yes 2 | 2 1K | | 679V00 589V00 910/70/9 | eng s spk.op skods | 2 2K | 2K | 2 | 2 | 1K |
| Data Bus (8 lines) Address Bus (16 lines) Control Bus (5 lines) | Yes Yes | Yes Yes | Yes Yes Yes | Yes Yes Yes | Yes Yes Yes | Yes Yes | Yes Yes Yes | Yes Yes | Yes Yes | Yes Yes |
| Program Counter Stack Register Data Counters | | Yes Yes 1 | Yes Yes 2 | Yes Yes 2 | | Yes Yes 2 | Yes Yes 2 | | | Yes Yes |
| Programmable Timer External Interrupt Pulse Width Measure | 12(23) | Yes Yes | | Yes Yes | | Yes Yes Yes | Yes Yes Yes | Yes Yes | Yes Yes Yes | |
| Event Counter Vectured Interrupts Memory Refresh Control DMA Control | | Yes | Yes Yes | Yes | Yes | Yes Yes | Yes Yes | Yes | Yes Yes | |
| +5V required +12V required Power mW (Typ) | Yes Yes 330 | Yes Yes 270 | Yes Yes 330 | Yes Yes 330 | Yes Yes 280 | Yes Yes 785 | Yes Yes 785 | Yes Yes 270 | Yes Yes 270 | Yes Yes 270 |
| Maximum # in System | 1 | 63 | 1 | 1 | 4 | 31 | 1 | 62 | 62 | 63 |
| Logic/Connection Diagram | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P2 | P6 | P8 |
| Package(s) | 6I,8P | 61,8P | 61,8P | 6I,8P | 61,8P | 61,8P | 6I,8P | 61,8P | 6I,8P | 61,8P |

Number of ports in System is limited by addressing. The maximum is 256 Port Addresses (each F8 device uses 4 Port Addresses). Maximum memory is 64K bytes RAM/ROM/PROM.

The F38T56 and F38T57 incorporate the F3871-type of timer logic and strobe logic. These devices will be available 3rd quarter 1978.

PORT ADDRESSING

F8 MICROPROCESSOR FAMILY

| | DEVICE | PORT A | | PORT B | | POF | TC | POI | RTD | TIMER INTERRUPT | | |
|------|-------------------|----------|---------------------------------|----------|--------------------------------|----------|--|----------|----------|--------------------------|--------------|--|
| Item | NO. | ADDR. | FUNC. | ADDR. | FUNC. | ADDR. | FUNC. | ADDR. | FUNC. | VECTOR ADDRESS | PORT TYPES | |
| 1 | F3850 | 0 | 1/0 | 1 | 1/0 | | | A STATE | | | Standard | |
| 2 | F3851 | XXXXXX00 | 1/0 | XXXXXX01 | 1/0 | XXXXXX10 | Control | XXXXXX11 | Timer | Mask Option | Mask Option | |
| 3 | F3851A | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0020' | Standard | |
| 4 | F3852 | H'OC' | | H'OD' | Control | H'OE' | ő | H'OF' | | | | |
| 5 | F3852/ SL31116 | H'EC' | | H'ED' | Control | H'EE' | ESSESSES OF THE PERSON NAMED IN COLUMN 1 | H'EF' | 28 2 | | July - | |
| 6 | F3853 | H'OC' | Interrupt Vector Addr. Lo | H'OD' | Interrupt Vector Addr.Hi | H'OE' | Control | H'OF' | Timer | Software Programmable | I | |
| 7 | F3854 | 1111YY00 | DMA Mem. Addr. Lo | 1111YY01 | DMA Mem Addr. Hi | 1111YY10 | Control Hi Count | 1111YY11 | Lo Count | | | |
| 8 | F3856 | XXXXXX00 | 1/0 | XXXXXY01 | 1/0 | XXXXXX10 | Control | XXXXXX11 | Timer | Mask Option | Mask Option | |
| 9 | F38T56 | XXXXXX00 | 1/0 | XXXXXY01 | 1/0 | XXXXXX10 | Control | XXXXXX11 | Timer | Mask Option | Mask Option | |
| 10 | F3856A | 8 | 1/0 | 9 | 1/0 | H'OA' | Control | H'OB' | Timer | H'0024' | Standard | |
| 11 | F3857 | | 1000 | | | XXXXXX10 | Control | XXXXXX11 | Timer | Mask Option | Mask Option | |
| 12 | F3861A | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0600' | Standard | |
| 13 | F3861B | 8 | 1/0 | 9 | 1/0 | H'A' | Control | H'B' | Timer | H'0340' | Standard | |
| 14 | F3861C | H'20' | 1/0 | H'21' | 1/0 | H'22' | Control | H'23' | Timer | H'0320' | Standard | |
| 15 | F3861D | H'24' | 1/0 | H'25' | 1/0 | H'26' | Control | H'27' | Timer | H'0360' | Standard | |
| 16 | F3861E | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0020' | Standard | |
| 17 | F3871E | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0020' | Standard | |
| 18 | F3871F | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0020' | Direct Drive | |
| 19 | F3871G | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0020' | Open Drain | |
| 20 | F3871H | 4 | 1/0 | 5 | 1/0 | 6 | Control | 7 | Timer | H'0420' | Standard | |

^{1.} XXXXXX is a Mask Option

^{2.} YY is a Pin Strap Option (1111YY00)

^{3.} The External Interrupt Address Vector is the Timer Address + H'0080' 5. F38T56 and F38T57 have F3871-type timer and strobe logic.

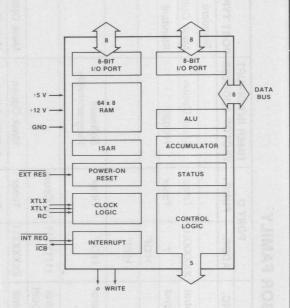
^{4.} Three different types of timers and control ports exist. For further detail see Figures 1, 2, and 3.

F8 MICROPROCESSOR FAMILY

F3850 CENTRAL PROCESSING UNIT (CPU)

The CPU is an 8-bit arithmetic device with 70 instructions. It contains a 64-byte RAM, an instruction register, an accumulator, two parallel I/O ports, an interrupt control, power on reset and clock generation logic. The CPU provides communication control lines to the other members of the family.

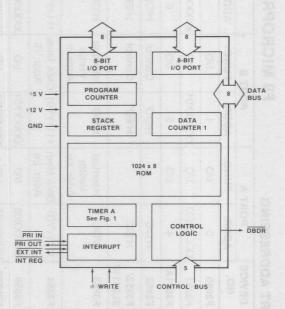
The F8 offers several alternatives for connecting memory to the system. These may be used individually, or in various combinations, depending upon the requirements.



F3850 CPU

F3851 PROGRAM STORAGE UNIT (PSU)

The F3851 PSU contains 1024 bytes of mask programmable ROM, a program counter and a data counter. It also has two parallel I/O ports, an 8-bit data port, a stack register, an incrementer/adder, a programmable timer and an interrupt control. Several F3851 circuits may be put in one system, thus increasing the ROM, I/O, and interrupt capability of the system. The F3851 program storage unit may be used alone, or in combination with one of the memory interface circuits.

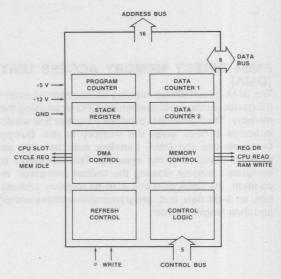


F3851 PSU

F8 MICROPROCESSOR FAMILY

F3852 DYNAMIC MEMORY INTERFACE (DMI)

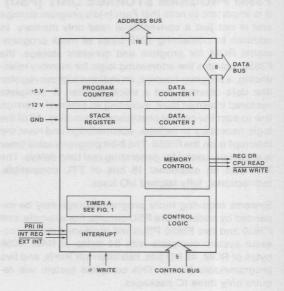
The DMI provides an appropriate interface for either static or dynamic memory components. When dynamic RAM circuits are used the DMI provides the necessary refresh controls required to maintain memory integrity. Another function of the DMI is to provide control for the F3854 DMA circuit. The dynamic memory refresh cycles and the DMA transfers are performed without slowing the central processor. The DMI also contains a program counter, data counter, an auxiliary data counter, stack register, incrementer/adder, an 8-bit data bus and a 16-bit address bus for communication with external memory. The DMI may be used solely with the CPU, or in conjunction with the F3851 PSU device.



F3852 DMI

F3853 STATIC MEMORY INTERFACE (SMI)

The SMI is the second of three alternative devices in the F8 family which may be used with the 3850 CPU for memory interface. The SMI provides the necessary control for static memory components such as the 2102 RAM, 2708 EPROM, or 93448 PROM. The SMI also contains a program counter, data counter, an auxiliary data counter, stack register, incrementer/adder, a programmable timer, an 8-bit data bus and a 16-bit address bus for communication with external memory. The F3853 may be used solely with the CPU, or in conjunction with F8 PSU devices.

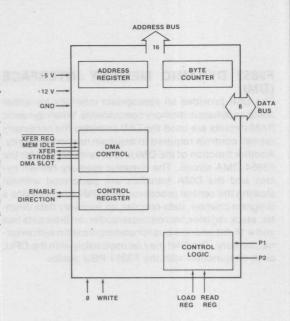


F3853 SMI

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F3854 DIRECT MEMORY ACCESS UNIT (DMA)

The DMA circuit allows memory access from an external device during periods when the CPU is not using the memory. The F3852 DMI provides a control line which indicates periods when the memory is idle. During these periods the DMA transfers data between an external device and the memory. This operation is performed without slowing the central processor. In addition, the DMA contains a 16-bit memory address bus, an 8-bit data bus, programmable address vector and data length counter.



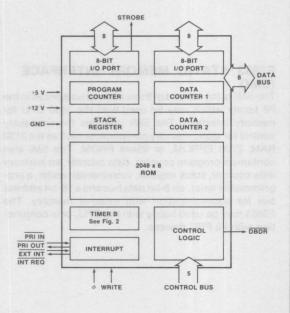
F3854 DMA

F3856 PROGRAM STORAGE UNIT (PSU)

It is important to note that Fairchild's program storage unit is not just a conventional read only memory. In addition to containing 2048 bytes of mask programmable ROM for program and constant storage, the F3856 includes the addressing logic for memory referencing, a program counter, an indirect address register (the data counter) and a stack register. A complete vectored interrupt level, including an external interrupt line to alert the central processor, is provided. All of the logic necessary to request, acknowledge and reset the interrupt is on the F3856. The 8-bit programmable timer is especially useful for generating real time delays. The PSU has an additional 16 bits of TTL compatible, bidirectional, fully latched I/O lines.

Systems requiring more program storage may be expanded by adding more PSU circuits. For example, one F3850 and two F3856 PSUs will produce a microprocessor system complete with 64 bytes of RAM, 4096 bytes of ROM, 48 I/O bits, two interrupt levels, and two programmable timers. This complete system will require only three IC packages.

The F38T56 incorporates the F3871-type timer and strobe logic.



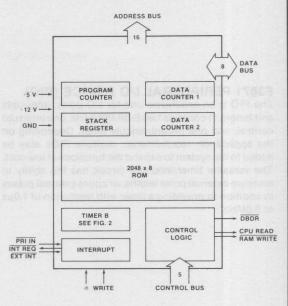
F3856 PSU

F8 MICROPROCESSOR FAMILY

F3857 PROGRAM STORAGE UNIT/STAT-IC MEMORY INTERFACE (PSU/SMI)

The F3857 is the third alternative device in the F8 family which may be used with the F3850 CPU for memory interface. The PSU/SMI provides the necessary control for static memory components such as the 2102 RAM or F2708 EPROM. The PSU/SMI also contains a program counter, data counter, an auxiliary data counter, stack register, incrementer/adder, a programmable timer, an 8-bit data bus and a 16-bit address bus for communication with external memory. The F3857 may be used solely with the CPU, or in conjunction with other members of the F8 family. The F3857 differs from the F3853 in that a 2048 byte mask programmable ROM is also included.

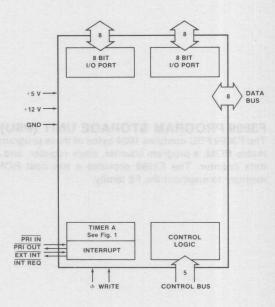
The F38T57 incorporates the F3871-type timer and strobe logic.



F3857 PSU/SMI

F3861 PERIPHERAL I/O DEVICE (PIO)

The PIO is an expansion unit for I/O ports, interrupts and timers. It contains two 8-bit I/O ports, one interrupt control, and one programmable timer. Depending on the application requirements, multiple PIOs may be added to the system to expand the functions at low cost.



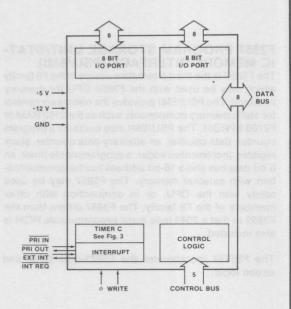
F3861 PIO

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F8 MICROPROCESSOR FAMILY

F3871 PERIPHERAL I/O DEVICE (PIO)

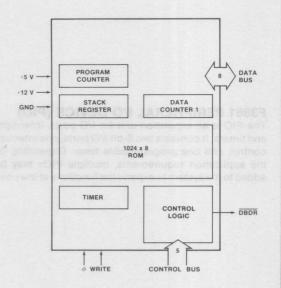
The PIO is an expansion unit for I/O ports, interrupts and timers. It contains two 8-bit I/O ports, one interrupt control, and one programmable timer. Depending on the application requirements, multiple PIOs may be added to the system to expand the functions at low cost. The versatile timer/interrupt circuit has the ability to measure external pulses widths, or count external pulses in addition to providing a timer with resolution of $1.0 \mu s$ at 2.0 MHz.



F3871 PIO

F3899 PROGRAM STORAGE UNIT (PSU)

The F3899 PSU contains 1024 bytes of mask programmable ROM, a program counter, stack register, and a data counter. The F3899 provides a low cost ROM memory to augment the F8 family.



F3899 PSU

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MICROMACHINE™ SERIES AND F8 FAMILY TIMERS

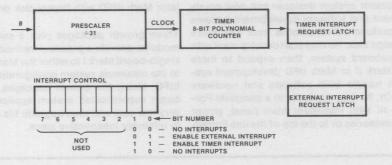


Fig. 1 Timer and Interrupt Control for F3851, F3853 and F3861

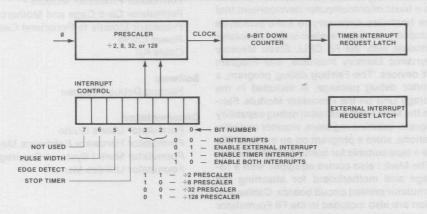


Fig. 2 Timer and Interrupt Control for F3856 and F3857

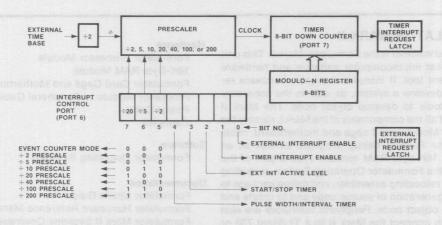


Fig. 3 Timer and Interrupt Control for F3870 and F3871

The microprocessor system designer can now create his own hardware and software development systems by selecting modular subassemblies from Fairchild's Formulator design aids. He may start development with a Mark I singleboard system, then expand to more sophisticated Mark II or Mark IIFD development systems that can handle both software and hardware development. Or, he may graduate to a complete Formulator Mark III with intelligent front panel, power supply, and accessories or to the top of the line Formu-

lator Mark IIIFD with floppy disk drives.

Three growth packages plus a selection of optional modules provide a practical method for upgrading the single-board Mark I to either the Mark II or Mark IIFD or to the maximum system configuration Mark III or Mark IIIFD. Using the growth packages, the designer can begin sophisticated system application programs at very low cost and then upgrade his development tools in relatively inexpensive steps.

FORMULATOR MARK I

The first member of the Formulator family, the Formulator Mark I, is a basic microcomputer development tool providing the hardware necessary to build prototype systems. Included in the basic system is the Formulator Processor Module with the F8 CPU, Static Memory Interface, Dynamic Memory Interface, and Program Storage Unit devices. The Fairbug debug program, a 1K-byte monitor debug package, is included in the Program Storage Unit on the Processor Module. Fairbug provides the Mark I with sufficient debug capability to load a program, examine registers, monitor and alter memory locations, store a program on an external file, and generate a tape suitable for burning PROM memory devices. The Mark I also comes equipped with a 13slot card cage and motherboard for attaching the modular Formulator printed circuit boards. Cables and documentation are also included in the F8 Formulator Mark I system, including a peripheral interface cable which can connect the Mark I to a Teletype ASR33 or TI Silent 733 for external communication.

Hardware

Formulator Processor Module
Formulator Card Cage and Motherboard
Processor Module to Peripheral Cable
Power Cable
Cable Kit

Software

Fairbug Debug Program

Documentation

Formulator User's Guide Formulator Hardware Reference Manual Formulator Mark I Systems Coverage Manual Formulator Utilities Manual

FORMULATOR MARK II

The second member is the Formulator Mark II. This unit is a low cost microcomputer software and hardware development tool. It includes the basic hardware required to develop a system, as well as the necessary software tools to develop object code. The Mark II consists of all the components of the Mark I, namely the Processor Module, card cage and motherboard, cable kit, and the Fairbug debug program, as well as an additional 16K-byte RAM module. Also a part of the Mark II is the Formulator Operating System, including the editor, relocating assembler, and debug package to allow the generation of source code and to create and check out object code. Peripheral interfaces are also available to connect the Mark II to a TI Silent 733 or Teletype ASR33.

Hardware

Formulator Processor Module
16K-Byte RAM Module
Formulator Card Cage and Motherboard
Processor Module to Peripheral Cable
Power Cable
Cable Kit

Software

Formulator Operating System

Documentation

Formulator User's Guide Formulator Hardware Reference Manual Formulator Mark II Systems Coverage Manual Formulator Utilities Manual

MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

FAIRCHILD MICROCOMPUTERS

FORMULATOR MARK IIFD

The third member is the Formulator Mark IIFD, a floppy-disk based low-cost microcomputer software and hardware development tool. It includes the basic hardware required to develop a system, as well as the necessary software tools to develop programs. The Mark IIFD consists of all the components of the Mark I, namely the Processor Module, card cage and motherboard, cable kit, and the Fairbug debug program, as well as an additional 16K-byte RAM Module. The F8-DOS-III is also a part of the Mark IIFD. It includes a floppy-disk file manager, editor, relocating assembler, and debug package to generate source code and to create and check out object code. The Mark IIFD can communicate with teletype ASR33 and other standard RS232 CRT or printing terminals.

Hardware

Parallel Interface Module Prom Boot Loader Module Formulator Processor Module 16K-Byte RAM Module Formulator Card Cage and Motherboard Processor Module to Peripheral Cable Power Cable Cable Kit

Software

F8-DOS-III Floppy Disk Operating System

Documentation

Formulator User's Guide Formulator Hardware Reference Manual Formulator Mark II Systems Coverage Manual Formulator Utilities Manual

FORMULATOR MARK III

The fourth level of microprocessor development equipment is the Formulator Mark III, offering all of the design assistance required to develop microprocessor systems. The combination of hardware, software, and firmware offered by the Mark III assists the designer from the generation of source programs through the development of a prototype system. The Mark III is a modular microcomputer that accommodates a variety of memory, input/output, and communication configurations to form a new and powerful development system. It contains all of the components of the Mark II—the Processor Module, card cage and motherboard, cable kit, the Fairbug debug program, 16K bytes of RAM, and the Formulator Operating System. In addition, the Mark III includes a Quad I/O Module with four I/O ports and two interrupts, a Communications Module with an onboard UART, a universal breadboard for building user hardware configurations, an extender module, and an intelligent operator's panel. Power supplies for the Mark III may be either 100 volts, 115 volts, or 220 volts at 50/60Hz. Peripheral interfaces are available to connect the Mark III with a TI Silent 733, a Teletype ASR33, or an HP 2645A Mini-Data Station.

Hardware

Formulator Mainframe Designer's Console with Firmware Formulator Processor Module 16K-Byte RAM Module Quad I/O Port Module Communications Module Universal Breadboard Extender Module Cable Kit User I/O Cable Assembly Communications Module to Peripheral Cable

Software

Fairbug Debug Program Formulator Operating System

Documentation

Formulator User's Guide Formulator Hardware Reference Manual Formulator Mark III Systems Coverage Manual Formulator Utilities Manual

FORMULATOR MARK IIIFD

equipment is the floppy-disk-based Formulator Mark IIIFD, offering all of the design assistance required to develop microprocessor based systems. The combination of hardware, software, and firmware offered by the module with four I/O ports and two interrupts, a com-Mark IIIFD assists the designer from the generation of munications module with an on-board UART, a universource programs through the development of a prototype system. The Mark IIIFD is a modular microcomputions, an extender module, and an intelligent operator's ter that accommodates a variety of memory, input/out- panel. Power supplies for the Mark IIIFD may be either put, and communication configurations to form a new 100 volts, 115 volts or 220 volts at 50/60Hz. The Mark and powerful development system. It contains all of the IIIFD can communicate with teletype ASR33 or other components of the Mark IIFD, the Processor Module, standard RS232 glass or printing terminals.

The top of the line in microprocessor development card cage and motherboard, cable kit, the Fairbug debug program, parallel interface, PROM boot loader, 16K bytes of RAM, and the F8-DOS-III disk operating system. In addition, the Mark IIIFD includes a guad I/O sal breadboard for building user hardware configura-

FAIRCHILD MICROCOMPUTERS

MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

FORMULATOR MARK IIIFD (Cont'd)

Hardware

Formulator Mainframe
Designer's Console with Firmware
Formulator Processor Module
Parallel Interface Module
PROM Boot Loader Module
16K-Byte RAM Module
Quad I/O Port Module
Communications Module
Universal Breadboard
Extender Module
Cable Kit

User I/O Cable Assembly
Communications Module to Peripheral Cable

Software

F8-DOS-III Floppy Disk Operating System

Documentation

Formulator User's Guide Formulator Hardware Reference Manual Formulator Mark III Systems Coverage Formulator Utilities Manual

F8-DOS-III DESCRIPTION

The Formulator F8-DOS-III operating system provides floppy-disk bulk storage capability for Fairchild's Formulator Mark IIFD and Mark IIIFD F8 microcomputers when used with up to four plug-compatible iCOM® series FD 360, FD3700 and Frugal Floppies™ providing for over one megabyte of total storage capacity.

F8-DOS-III provides a powerful and complete development software package with batch operation, linking loader, and relocating assembler, and provides an easy to use, reliable, fast and extremely efficient capability for auxiliary program and data storage during F8 and F3870 software development or in end-user applications.

| iCOM® Advertised | F8-DOS-III SUMMARY | | | | | | | | |
|--|---|--|---|---|--|--|--|--|--|
| FD3700 Series Features | Disk Monitor | Editor | Relocating Assembler | Real-Time Debugger | | | | | |
| Fully IBM 3740 media and format compatible Full formatter and controller built-in Full sector Read/Write buffers allow asynchronous or DMA data transfer Drive and diskette Write Protect capability Positive latching door mechanism Up to 4 drives with no software or hardware modifications | Assemble (Relocating) Load (Linking) List Directory Print File Rename File Create File Delete File Copy File Copy Disk GenMod (Created Linked File) Edit Mode | Move Line Copy Line Bottom Change Delete File Find String Insert Locate String Next Replace Tab Top | No-List Option No-Object Option Error Messages Invalid Label Duplicate Label Invalid Op Code Operand Error Syntax Error Undefined Symbol Expression Storage Overflow Relocatability Error | Symbolic Debugging Set Up to 8 Breakpoirt Clear Breakpoint Clear All Breakpoints Continue Execution Go To Location Return to Monitor Single Step Trace On Long Trace On Short Trace Off Display Memory Display Register | | | | | |
| MTBF in excess of 2300 hours (FD 3712 dual drive) Plug-in convenience allows MTTR of 18 minutes Front panel LED status indicators LED drive select indicators Fully retracting head and pressure pad for maximum diskette life 50 pin flat ribbon cable with 3M interface connector— FD 360 compatible | | Interest of control of the control o | Pseudo Operand Error Cross Reference | Display Port Store Memory Store Register Store Port | | | | | |

MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

FAIRCHILD MICROCOMPUTERS

FORMULATOR GROWTH PACKAGES

The Mark I. Mark II. and Mark III Formulator systems previously described are all upwards compatible. The Mark I can be expanded to become a Mark II; likewise, the Mark II may be developed into a Mark III. In addition, a Mark II can be expanded to a Mark IIFD and a Mark III into a Mark IIIFD. This means that a microprocessor system designer may enter the microcomputer design at a level which best matches the needs at handamount of available money, time, microprocessor experience—and be able to increase the Formulator's capabilities as his needs grow. Three growth packages are available to Formulator product owners. Growth Package 1 converts a Mark I system to a Mark II; Growth Package 2 extends the capabilities of the Mark II into the Formulator Mark III, and Growth Package 3 extends a Mark II or III into a Mark IIFD or IIIFD.

Growth Package I

16K-Byte RAM Module Mark II Formulator Operating System

Growth Package 2

Quad I/O Module Communications Module Power Supply Console Control Modules Internal Cable Wiring Universal Breadboard Extender Module I/O Cable Assembly Communications Module to Peripheral Cable Mark III Formulator Operating System

Growth Package 3

Parallel Interface Module PROM Boot Loader Module F8-DOS-III System Diskette

PERIPHERAL OPTIONS

The Formulator Mark II systems interface with either a Teletype ASR33 with the auto read/auto punch option or a TI Silent 733 ASR with the ADC option. The teletype terminal provides a paper tape based system, while the 733 allows file storage on magnetic tape cassettes. To decrease load times, a Remex high speed paper-tape reader (or equivalent) may be used with either peripheral unit.

The Formulator Mark III provides an interface for the HP Mini-Data Station as well. This high speed unit combines the efficiency of the magnetic tape cartridges with an intelligent terminal and thermal line printer to allow the rapid development and debugging of application programs.

The Formulator Mark IIFD and IIIFD systems interface with any standard RS232 terminal and printer or printing terminal to offer maximum peripheral cost/speed flexibility.

HP MINI-DATA STATION

The HP 2645A Mini-Data Station features an interactive CRT Terminal with high resolution display and a fully integrated mass storage capability, making it easy to use both on- and off-line. It uses 2-1/2" x 3-1/4" x 1/2" magnetic cartridges which store up to 110 kilobytes of formatted data. The Mini-Data Station has two mini cable, and an Instruction Manual.

cartridge drives, allowing for a total of 220 kilobytes of data storage on magnetic tape. Thus, all files-both operating system and user files-are resident on the magnetic tape. Loading and storing files is accomplished by reading and writing onto the cartridge. The user's time is decreased and efficiency increased when the magnetic tapes are used.

The 2645 Mini-Data Station comes equipped with three data cartridges, an Owner's Manual, and an Installation and Service Manual.

HP 9866A PRINTER SUBSTATION

The HP 9866A line printer is a moderately priced, high performance companion to the HP 2645A Mini-Data Station, providing a permanent record of the contents of the Mini-Data Station display and memory for future use. The printer operates at up to 240 lines per minute with a maximum line width of 80 characters. The character set consists of 64 alphanumeric characters generated by a 5 x 7 dot matrix. Since a thermal printing mechanism is used to make this printer quiet enough for normal office use, thermal sensitive paper is reguired. This paper is 8-3/4 inches wide and available in 250 foot rolls.

The 9866A thermal printer comes equipped with two rolls of paper, a power cord, an interface card and

ICOM F3712 DUAL FLOPPY DISK

The iCOM FD3700 Series Floppy Disk System for microcomputers continues the tradition of the iCOM FD360. The FD3700 brings to the OEM, and to the development lab, proven reliability and popular features, while incorporating advanced styling and new convenience items.

The iCOM FD3700 Series features the following:

- Fully IBM 3740 media and format compatible
- · Full formatter and controller built in
- Full sector read/write buffers allow asynchronous or DMA data transfer
- Drive and diskette write-protect capability
- Positive latching door mechanism
- Up to four drives with no software or hardware modifications
- MTBF in excess of 2300 hours (FD3712 dual drive)
- Plug-in convenience allows MTTR of 18 minutes

- Front panel LED status indicators
- · LED drive select indicators
- Fully retracting head and pressure pad for maximum diskette life
- 50-pin flat ribbon cable with 3M interface connector—FD360 compatible

iCOM Performance features are as follows:

- Disk speed 360 RPM ± 1.5%
- 10 ms track-to-track access time
- · 40 ms head load time
- 5 ms sector read/write time
- 83 ms average latency time
- · 700 ms automatic head unload time
- 1 ms interrecord time

Power Requirements Are:

110-125 V_{ac}, 60Hz, 200 W max Optional 220-240 V_{ac}, 50Hz, 200 W is available

OPTIONAL FORMULATOR MODULES

Expansion of the Formulator microcomputers need not occur along the path indicated by the growth packages. Optional Formulator modules are available to expand RAM, PROM I/O, and communications, so the user can develop a custom system which is perfectly suited to his specific needs. These optional modules may be attached to the Formulator via the 13 card slots in the motherboard. The first three slots are dedicated to front panel operations of the Mark III. Another slot is reserved for the Processor Module. The remaining nine slots are linked on a common bus whose signals are compatible with the modules themselves. Additional system functions may be easily added to any Formulator system by simply plugging in one of the modules. Thus, the initial Formulator investment is preserved.

Nothing needs to be discarded as demands upon the system increase. Unless otherwise noted, all of the following optional modules are available to update any Mark I, Mark II, Mark IIFD, Mark III, or Mark IIIFD system to meet expanded requirements.

Optional Modules

4K-Byte RAM Module
16K-Byte RAM Module
Quad I/O Port Module
4K-Byte PROM Module
Communications Module
Byte Parallel Interface Module
ROM Simulation Module
Universal breadboard
Extender Module
I/O Light Display Board

PROM PROGRAMMER

The ability to easily program permanent memory devices is essential to any microprocessor design. The Formulator PROM Programmer connects to a Quad I/O Module within either a Formulator Mark II or a Formulator Mark III, permitting the programming of any of the following fuseable link or ultraviolet light eraseable PROMs from a pattern stored in the Formulator memory.

The 11" x 12" x 4" PROM Programmer is driven by a utility program contained within the Formulator Operating System and features a simple, easy to use com-

mand set. The commands, entered into the PROM Programmer from the Formulator peripheral via the keyboard, allow the user to transfer data from a PROM to memory, burn a PROM, verify a PROM pattern, manually enter a single byte of data, and display PROM locations using the system software. The programming idiosyncrasies of each PROM are contained in software look-up tables to relieve the user of intricate repetitious set-up. The procedure is simply to identify the PROM type (like 93448) and the PROM parameter look-up table is automatically invoked, defining such things as number of words, word bit length, burn time, wait time, retry conditions, etc. The programming is convenient

MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

PROM PROGRAMMER (Cont'd)

enough to allow the PROM Programmer to be used in a production environment.

Included in the basic system are two socket boards, one for the Fairchild 93436/93446 PROMs and one for the 93438/93448 PROMs. Socket boards for the ultraviolet eraseable devices are also available. A cable to the Quad I/O Module and a power cord are also included in the basic unit.

| Fairchild Fusible Link PROMS | Ultraviolet Eraseable PROM |
|------------------------------|-------------------------------|
| 93436 (512 x 4) | 2704 (512 x 8) |

93446 (512 x 4) 93438 (512 x 8) 93448 (512 x 8)

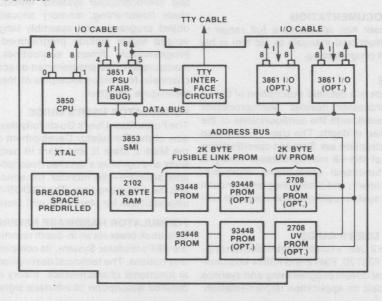
2708 (1024 x 8)

OCM-1 ONE-CARD MICROCOMPUTER

The OCM-1 is a complete microcomputer system contained on a single printed circuit board and offering the following features:

- · 64-byte scratch pad memory
- 1K-byte RAM
- 8K-byte ROM (1K supplied, sockets provided for balance)
- 4K-byte EPROM (sockets provided)
- 4K-byte PROM (sockets provided)
- Up to four programmable timers
- Up to four programmable interrupts
- RS232 interface (current loop optional)
- 2MHz clock
- Self-contained Fairbug teletype operating sys-
- Up to 64 individually programmable, bidirectional, latched I/O lines.

The unit is based on the F8 microcomputer and is fully supported by the Formulator family of program development aids. In addition, the OCM-1 contains a built-in teletype operating system, called Fairbug I, contained in the F3851A Program Storage Unit. Using an OCM-1to-TTY cable assembly, the board can be directly coupled to a teletype or RS232 terminal to display or alter memory location, to load and punch paper tape, or to make entries from the keyboard or by program instruction. An alternative built-in operating system, K-D Bug, contained in the F3856A PSU is also available. It provides all of the Fairbug I functions plus a resident monitor to facilitate operation with a low-cost calculator-style keyboard and LED display. A Fairbug user's guide is provided with the OCM-1. The K-D Bug should be ordered as a separate item.



MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

ONE CARD MICROCOMPUTER (Cont'd)

The OCM-1 processor section includes the 3850 Central Processing Unit, the F3853 Static Memory Interface, a 2MHz clock, and reset circuitry.

The OCM-1 memory section contains the capability for the use of five different types of storage including 64 bytes of scratch pad, 1K bytes of RAM, sockets for 2K bytes of EROM (2708), sockets for 2K bytes of fusible link PROM (93448), and the Fairbug I operating system.

The I/O portion of the system is contained in the F3850 Central Processing Unit and a F3851A Program Storage Unit, each containing two 8-bit I/O ports. Two sockets are provided for inserting standard F8 PIO circuits (F3861 or F3871) or, if more ROM is required, standard PSUs (F3851 or F3856) may be inserted. In either case, four additional I/O ports are provided bringing the maximum total to eight I/O ports (64 lines). Only single-byte instructions are required to individually program these lines for either input or output functions. Latches on each line reduce external hardware cost. A circuit on the board gives the OCM-1 the capability of communicating with a teletype, RS232 device or 20mA current loop.

In its standard configuration, the OCM-1 contains two interrupts and two timers, one in the F3851A PSU and one in the F3853 SMI. Two additional interrupts and timers may be added by plugging the two additional PIOs into their sockets. A "daisy-chained" priority system determines which interrupt will be serviced if two or more requests are made simultaneously.

The OCM-1 requires three power supply voltages: $\pm 12V$ @ 0.255 A, $\pm 5V$ @ 0.4 A and $\pm 5V$ @ 0.09 A. The $\pm 5V$ supply is used only for the 2708 EROM devices. All supply voltages are $\pm 5V$ maximum.

The entire microcomputer is contained on a single board (epoxy glass with solder mask) measuring approximately 7.5 inches by 10.5 inches. It includes a 2-inch by 4-inch pre-drilled breadboarding area for users who want to develop unique system configurations. In addition, a Formulator-compatible 100-pin edge connector, a special connector for TTY or terminal, and two 44-pin edge connectors for F8 signals, are contained on the board. A switch to enable the Fairbug operating system is also provided. The OCM-1 is delivered completed with OCM-1 Users Manual, Fairbug Users Guide and F8 Guide to Programming.

FORMULATOR SUPPORT

In addition to the optional boards, peripherals, cables, and other accessories, the Mark I, Mark II, and Mark III Formulator systems are supported by a wide range of documentation, and an intensive training program.

FORMULATOR DOCUMENTATION

The Formulator user has access to a full range of reference and instructional manuals to aid him in his system design and programming.

F8 USER'S GUIDE

The F8 User's Guide is a detailed description of the F8 family of microprocessor devices. Microprocessor systems are discussed, with the configurations of the F8 circuits examined in depth. The User's Guide also outlines the F8 instruction set. Detailed specifications of each member of the F8 microprocessor family is given, including functional descriptions, logic diagrams, signal load levels, and timing diagrams for each circuit. Typical F8 system configurations are also presented.

MICROMACHINE USER'S GUIDE

The Micromachine 2 User's Guide is a detailed description of the F3870, F38T70, F3872 and F3874 Micromachines. This manual covers programming and systems design with emphasis on application implementation.

GUIDE TO PROGRAMMING

The Guide to Programming is written for logic designers with little or no background in computer programming. It introduces machine and assembly language programming to the potential user of microprocessors and microcomputer systems. Introductory topics include flowcharting, memory allocation, source and object programs, and assembly language. More advanced topics include programmed I/O, interrupts, programmable timers, subroutines, macros, data manipulation, and programmed direct memory access channels. Numerous examples of these programming techniques are given.

FORMULATOR USER'S GUIDE

The Formulator User's Guide fully describes the operation of the Formulator Development system. It covers the Mark I, Mark II, and Mark III hardware configurations and contains a detailed description of the Formulator software—the monitor, the editor, the assembler, and the debug program. The F8 DOS-III User's Guide is also available for Mark IIFD and Mark IIIFD systems.

FORMULATOR HARDWARE REFERENCE MANUAL

This book presents an in-depth technical description of the F8 Formulator System, its component subsystems, and options. The technical description includes general functional characteristics, theory of operation, and detailed description of interface signals.

FAIRCHILD MICROCOMPUTERS

F6800 MICROPROCESSOR FAMILY

F6800 MICROPROCESSOR FAMILY

| Item | DEVICE NO. | Function | Power Supply V | PDMax (Typ) mW | Cycle Time ns | Access Time ns | Memory Size | Logic/ Connection Diagram | Package(s) |
|------|----------------------|--|----------------------|----------------------|---------------------|----------------------|----------------|---------------------------------|------------|
| 1 | F6800 | MPU, Address, Interrupt | 5.0 | (600) | 1000 | The same of | miT, Ost | P10 | 61,8P |
| 2 | F68A00 | MPU, Address, Interrupt | 5.0 | (500) | 667 | | 48 3330 | P10 | 6I,8P |
| 3 | F68B00 | MPU, Address, Interrupt | 5.0 | (500) | 500 | 10508 | eA sisC | P10 | 6I,8P |
| 4 | F6801 ⁽¹⁾ | Single Chip Microcomputer with 128x8 RAM | 5.0 | (500) | 500 | Yeliqi | 2Kx8 (ROM) | P10 | 6I,8P |
| 5 | F6802 | MPU, Address, RAM Interrupt | 5.0 | (600) | 1000 | 1811 | 128x8 (RAM) | P19 | 6I,8P |
| 6 | F68A02 | MPU, Address, RAM, Interrupt | 5.0 | (600) | 667 | reto | 128x8 | P19 | 6I,8P |
| 7 | F68B02 | MPU, Address, RAM, Interrupt | 5.0 | 600 | 500 | D. Arit.I | 128x8 | P19 | 6I,8P |
| 8 | F6809 ⁽²⁾ | MPU, Address, Interrupt | 5.0 | | 500/1K | OF ACTION | | | 61,6T |
| 9 | F6810 | Static RAM | 5.0 | 400 | | 460 | 128x8 | P13 | 7R,9N |
| 10 | F68A10 | Static RAM | 5.0 | 400 | | 360 | 128x8 | P13 | 7R,9N |
| 11 | F68B10 | Static RAM | 5.0 | 400 | | 250 | 128x8 | P13 | 7R,9N |
| 12 | F6820/21 | Parallel I/O 16 lines | 5.0 | 550 | 1000 | EHRI | 129 pt | P11 | 6I,8P |
| 13 | F68A21 | Parallel I/O 16 lines | 5.0 | 550 | 667 | | | P11 | 6I,8P |
| 14 | F68B21 | Parallel I/O 16 lines | 5.0 | 550 | 500 | | | P11 | 6I,8P |
| 15 | F68308 | Mask Prog ROM | 5.0 | 650 | | 500 | 1Kx8 | P14 | 7R,9N |
| 16 | F68A308 | Mask Prog ROM | 5.0 | 650 | | 360 | 1Kx8 | P14 | 7R,9N |
| 17 | F68B308 | Mask Prog ROM | 5.0 | 650 | | 250 | 1Kx8 | P14 | 7R,9N |
| 18 | F68316 | Mask Prog ROM | 5.0 | | | 500 | 2Kx8 | P15 | 7R,9N |
| 19 | F68A316 | Mask Prog ROM | 5.0 | | anolls | 360 | 2Kx8 | P15 | 7R,9N |
| 20 | F68B316 | Mask Prog ROM | 5.0 | | | 250 | 2Kx8 | P15 | 7R,9N |
| 21 | F6840 | Programmable Timer | 5.0 | 550 | 1000 | | | P16 | 8E,9Y |
| 22 | F68A40 | Programmable Timer | 5.0 | 550 | 667 | | in waters | P17 | 8E,9Y |
| 23 | F68B40 | Programmable Timer | 5.0 | 550 | 500 | | | P17 | 8E,9Y |
| 24 | F6843 ⁽¹⁾ | Floppy Disk Interface | 5.0 | | | | | | 61 |
| 25 | F6844 ⁽¹⁾ | Direct Memory Access | | | | | | | 61 |
| 26 | F6845 ⁽¹⁾ | CRT Controller | 5.0 | | | | | P22 | 6I,8P |
| 27 | F6846 | ROM, I/O, Timer | 5.0 | 800 | 1000 | | 2Kx8 | P20 | 6I,8P |
| 28 | F68A46 | ROM, I/O, Timer | 5.0 | 800 | 667 | | 2Kx8 | P20 | 61,8P |

^{1.} To be announced

^{2.} F6809 supports the F6800 instruction set but also has enhanced instructions and additional hardware features.

FAIRCHILD MICROCOMPUTERS

F6800 MICROPROCESSOR FAMILY

F6800 MICROPROCESSOR FAMILY (Cont'd)

| Item | DEVICE NO. | Function | Power Supply V | P _D Max (Typ) mW | Cycle Time ns | Access Time ns | Memory Size | Logic/ Connection Diagram | Package(s) |
|------|---------------|------------------------|----------------------|-----------------------------------|---------------------|----------------------|----------------|---------------------------------|------------|
| 1 | F68B46 | ROM, I/O, Timer | 5.0 | 800 | 500 | चुन तहांग | 2Kx8 | P20 | 61,8P |
| 2 | F68488 | GPIA (IEEE Bus) | 5.0 | | | quilate | ezantito | P25 | 6I,8P |
| 3 | F6850 | Async Data Adapter | 5.0 | 300 | 1000 | ou neth | diffess | P12 | 7R,9N |
| 4 | F68A50 | Async Data Adapter | 5.0 | 300 | 667 | Igmean | icitii sint | P12 | 7R,9N |
| 5 | F68B50 | Async Data Adapter | 5.0 | 300 | 500 | | GRIT U.S. | P12 | 7R,9N |
| 6 | F6852 | Sync Data Adapter | 5.0 | 300 | 1000 | | 200700 | P17 | 6J,9B |
| 7 | F68A52 | Sync Data Adapter | 5.0 | 300 | 667 | NLST | sassist. | P17 | 6J,9B |
| 8 | F68B52 | Sync Data Adapter | 5.0 | 300 | 500 | | 10 | P17 | 6J,9B |
| 9 | F6854 | Advanced Data Link CTL | 5.0 | | 1000 | NA | ddress | P18 | 8E,9Y |
| 10 | F68A54 | Advanced Data Link CTL | 5.0 | | 667 | | | P18 | 8E,9Y |
| 11 | F68B54 | Advanced Data Link CTL | 5.0 | | 500 | CHATELA | ASSESSED EN | P18 | 8E,9Y |
| 12 | F6860 | 0-600 BPS Modem | 5.0 | 325 | | | 7167.13 | P23 | 7R,9N |
| 13 | F6862 | 2400 BPS Modulator | 5.0 | 300 | | | TAMES | P24 | 7R,9N |

MICROPROCESSOR PERIPHERALS

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|-------|---------|-----------|-------------------------------|---------------------------------------|---|---|---|---|--|---|
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| USART | 219 | 250x6 | ona | | F3843 | C | 28 | S8 | 8E | 81 |
| | | otocol Co | ommunicat | ions | F3846 ⁽¹⁾ | C | 40 | vee-ti- | IFEAS <mark>ST</mark> | er. |
| | Synchro | | USART Synchronous Protocol Co | USART Synchronous Protocol Communicat | USART Synchronous Protocol Communications Controller | USART F3843 Synchronous Protocol Communications F3846 ⁽¹⁾ | USART F3843 C Synchronous Protocol Communications F3846 ⁽¹⁾ C Controller | USART F3843 C 28 Synchronous Protocol Communications F3846 ⁽¹⁾ C 40 Controller | USART F3843 C 28 S8 Synchronous Protocol Communications F3846 ⁽¹⁾ C 40 — Controller | USART F3843 C 28 S8 8E Synchronous Protocol Communications F3846 ⁽¹⁾ C 40 — Controller |

^{1.} To be announced

^{2.} F6809 supports the F6800 instruction set but also has enhanced instructions and additional hardware features.

^{3.} C = Commercial temperature range

FAIRCHILD MICROCOMPUTERS

8-BIT BIPOLAR MICROPROCESSOR FAMILY

LSI PERIPHERAL LOGIC ELEMENTS

| Item | DEVICE NO. | Functional Description | Power Supply V | Maximum Frequency MHz (Typ) | Power mW (Typ) | Logic/ Connection Diagram | Package(s) |
|------|---------------|--|----------------------|--------------------------------------|----------------------|---------------------------------|------------|
| 1 | 9401 | 16-Bit Cyclic Redundancy Generator/Checker | 5.0 | 18 | 350 | P26 | 6A,7A |
| 2 | 9403 | 16x4-Bit Serial/Parallel FIFO Buffer Memory | 5.0 | 10 | 600 | P27 | 6Q,9U |
| 3 | 9423 | 64x4-Bit Serial/Parallel FIFO Buffer Memory | 5.0 | 8.0 | 750 | P27 | 6Q,9U |

BIT SLICE MICROPROCESSORS

| Item | DEVICE NO. | Functional Description | Power Supply V | Maximum Frequency MHz (Typ) | Power mW (Typ) | Logic/ Connection Diagram | Package(s) |
|------|---------------|--|----------------------|--------------------------------------|----------------------|---------------------------------|------------|
| 4 | 9404 | Data Path Switch | 5.0 | 10 | 300 | P28 | 6Q,9U |
| 5 | 9405A | 4-Bit Arithmetic Logic Register Stack (CPU slice with 8 Registers) | 5.0 | 13 | 550 | P29 | 6Q,9U |
| 6 | 9406 | 16x4 push-down pop-up Program Stack | 5.0 | 10 | 500 | P30 | 6Q,9U |
| 7 | 9407 | Data Access Register (PC, SP and operand pointer) | 5.0 | 10 | 450 | P31 | 6Q,9U |
| 8 | 9408 | 10-Bit Microprogram Sequencer/Controller (pipeline capability) | 5.0 | 7.0 | 650 | P32 | 6Q,9U |
| 9 | 9408A | 10-Bit Microprogram Sequencer/Controller (pipeline capability) | 5.0 | 10 | 650 | P32 | 6I,8P |
| 10 | 9410 | Register Stack (16x4 RAM with output latch) | 5.0 | 25 | 375 | P33 | 7D,9M |

8-BIT CMOS MICROPROCESSOR FAMILY

LSI PERIPHERAL LOGIC ELEMENTS

| Item | DEVICE NO. | Functional Description | Power Supply V | Frequency MHz (Typ @ 5V) | Power mW (Typ @ 5V) | Logic/ Connection Diagram | Package(s) |
|------|---------------|--|----------------------|-----------------------------------|---------------------|---------------------------------|------------|
| 1 | 4702B | Programmable Bit Rate Generator | 3-15 | 5.0 | 0.05 | P35 | 4L,6B,9B |
| 2 | 4703B | 16x4-Bit Serial/Parallel FIFO Buffer Memory | 3-15 | 2.3 | 0.015 | P36 | 4M,6Q,9U |

BIT SLICE MICROPROCESSORS

| 3 | 4704B | Data Path Logic Switch | 3-15 | 4.3 | 0.015 | P37 | 4M,6Q,9U |
|---|-------|--|------|-----|-------|-----|----------|
| 4 | 4705B | 4-Bit Arithmetic Logic Register Stack | 3-15 | 2.0 | 0.015 | P38 | 4M,6Q,9U |
| 5 | 4706B | 16x4 Push-down Pop-up Program Stack | 3-15 | 2.0 | 0.015 | P39 | 4M,6Q,9U |
| 6 | 4707B | Data Access Register | 3-15 | 5.2 | 0.015 | P40 | 4M,6Q,9U |
| 7 | 4708B | 10-Bit Microprogram Sequencer/Controller (pipeline capability) | 3-15 | 2.0 | 0.015 | P41 | 6I,8P |
| 8 | 4710B | Register Stack (16x4 RAM with output latch) | 3-15 | 6.8 | 0.01 | P42 | 7D,9M |

16-BIT MICROPROCESSOR FAMILY

9440 16-BIT BIPOLAR MICROPROCESSOR

The 9440 I³L microprocessor is a minicomputer CPU compactly packaged in a 40-pin DIP. It requires a 5.0 V power supply and dissipates 1.0 W of power. A full military temperature range version is available.

9440 features include TTL input/output levels, single static clock driven by an on-chip oscillator (up to 12MHz, variable), microprogram control using a PLA (program logic array), eight 16-bit on-chip registers, priority interrupt handling with up to 16 priority levels, fast direct memory access at memory speeds, four classes of instructions allowing a total of 2192 different instructions, and 32 K 16-bit words (65 K byte) addressing ranges.

The 9440 system includes the following LSI support circuits:

9441* Memory Control Unit—contains a 15-bit memory address register, refresh address counter

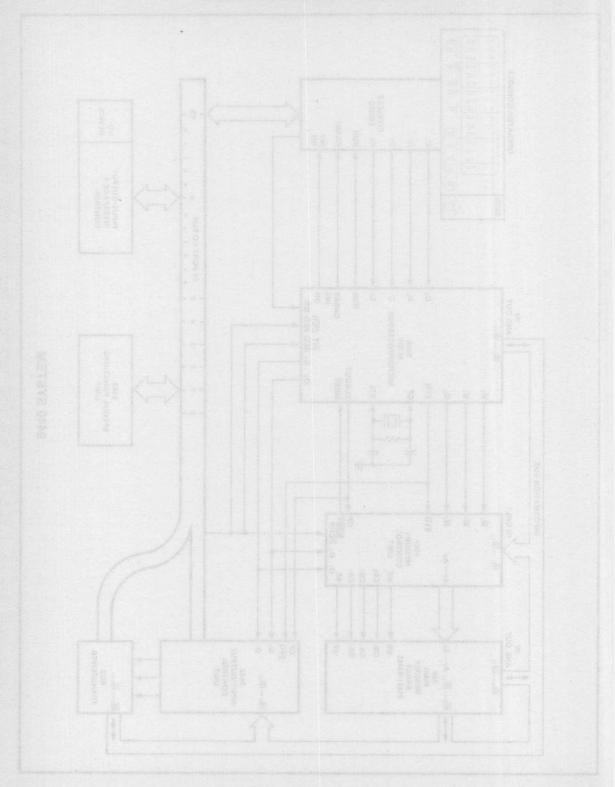
and a 7-bit address multiplexer. It provides the timing and control signals to operate up to 32K words (64K bytes) of I³L dynamic memory (93481, 93483) for read, write, refresh and DMA operations.

9442* Input/Output Control Unit—responds to I/O instructions and generates the timing and control signals for 9440 peripheral devices.

9443* Special Functions Unit—executes the multiply, divide and stack instructions.

To fully utilize the 9440 flexible instruction set the Fairchild Integrated Real-time Executive (FIRE™) software package is provided. It consists of all the required program development aids plus a full set of diagnostic programs as well as high level language processors.

^{*}To be announced



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12

JAN QPL STATUS

LINEAR

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 10101BCA | 741 | gli | В | DIP | Solder |
| 2 | 10101BCB | 741 | g [] | В | DIP | Tin Plate |
| 3 | 10101BGA | 741 | a 1 | В | CAN | Solder |
| 4 | 10101BGB | 741 | g I | В | CAN | Tin Plate |
| 5 | 10101BGC | 741 | g 1 | В | CAN | Gold Plate |
| 6 | 10101BHA | 741 | g 1 | В | FLAT | Solder |
| 7 | 10101BHB | 741 | g 1 | В | FLAT | Tin Plate |
| 8 | 10101BHC | 741 | g 1 | В | FLAT | Gold Plate |
| 9 | 10101CCA | 741 | 9 1 | С | DIP | Solder |
| 10 | 10101CCB | 741 | 6 1 | С | DIP | Tin Plate |
| 11 | 10101CGA | 741 | -o I | С | CAN | Solder |
| 12 | 10101CGB | 741 | o I | С | CAN | Tin Plate |
| 13 | 10101CGC | 741 | 0 1 | С | CAN | Gold Plate |
| 14 | 10101CHA | 741 | 5 1 | С | FLAT | Solder |
| 15 | 10101CHB | 741 | 5 I | С | FLAT | Tin Plate |
| 16 | 10101CHC | 741 | 5 1 | С | FLAT | Gold Plate |
| 17 | 10102BAA | 747 | g I | В | FLAT | Solder |
| 18 | 10102BAB | 747 | 8 I | В | FLAT | Tin Plate |
| 19 | 10102BAC | 747 | | В | FLAT | Gold Plate |
| 20 | 10102BCA | 747 | 8 [| В | DIP | Solder |
| 21 | 10102BCB | 747 | a I | В | DIP | Tin Plate |
| 22 | 10102BIA | 747 | I. | В | CAN | Solder |
| 23 | 10102BIB | 747 | ii 11 | В | CAN | Tin Plate |
| 24 | 10102BIC | 747 | A 1 | В | CAN | Gold Plate |
| 25 | 10102CAA | 747 | 3 1 | С | FLAT | Solder |
| 26 | 10102CAB | 747 | e 1 | С | FLAT | Tin Plate |
| 27 | 10102CAC | 747 | a 1 | С | FLAT | Gold Plate |
| 28 | 10102CCA | 747 | a 1 | С | DIP | Solder |
| 29 | 10102CCB | 747 | 0 1 | С | DIP | Tin Plate |
| 30 | 10102CIA | 747 | 0.1 | С | CAN | Solder |
| 31 | 10102CIB | 747 | o II | С | CAN | Tin Plate |
| 32 | 10102CIC | 747 | 3 1 | С | CAN | Gold Plate |

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish | |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|--|
| 1 | 10103BCA | 101A | 8 1 | В | DIP | Solder | |
| 2 | 10103BCB | 101A | 3 1 | В | DIP | Tin Plate | |
| 3 | 10103BGA | 101A | 8 1 | В | CAN | Solder | |
| 4 | 10103BGB | 101A | 1 | В | CAN | Tin Plate | |
| 5 | 10103BGC | 101A | 8 1 | В | CAN | Gold Plate | |
| 6 | 10103BHA | 101A | 8 1 | В | FLAT | Solder | |
| 7 | 10103BHB | 101A | 8 1 | В | FLAT | Tin Plate | |
| 8 | 10103BHC | 101A | 8 1 | В | FLAT | Gold Plate | |
| 9 | 10103CCA | 101A | 3 T | С | DIP | Solder | |
| 10 | 10103CCB | 101A | 9 L | С | DIP | Tin Plate | |
| 11 | 10103CGA | 101A | 3 1 | С | CAN | Solder | |
| 12 | 10103CGB | 101A | 2 11 | С | CAN | Tin Plate | |
| 13 | 10103CGC | 101A | 9 1 | С | CAN | Gold Plate | |
| 14 | 10103CHA | 101A | T. | С | FLAT | Solder | |
| 15 | 10103CHB | 101A | 1 | С | FLAT | Tin Plate | |
| 16 | 10103CHC | 101A | 9 1 | С | FLAT | Gold Plate | |
| 17 | 10104BCA | 108A | 8 1 | В | DIP | Solder | |
| 18 | 10104BCB | 108A | 8 1 | В | DIP | Tin Plate | |
| 19 | 10104BGA | 108A | 8 1 | В | CAN | Solder | |
| 20 | 10104BGB | 108A | 9 1 | В | CAN | Tin Plate | |
| 21 | 10104BGC | 108A | 1 | В | CAN | Gold Plate | |
| 22 | 10104BHA | 108A | 1 | В | FLAT | Solder | |
| 23 | 10104BHB | 108A | 1 | В | FLAT | Tin Plate | |
| 24 | 10104BHC | 108A | 2 1 | В | FLAT | Gold Plate | |
| 25 | 10104CCA | 108A | 9 1 | С | DIP | Solder | |
| 26 | 10104CCB | 108A | 211 | С | DIP | Tin Plate | |
| 27 | 10104CGA | 108A | 2 1 | С | CAN | Solder | |
| 28 | 10104CGB | 108A | 2 1 | В | CAN | Tin Plate | |
| 29 | 10104CGC | 108A | 2 1 | С | CAN | Gold Plate | |
| 30 | 10104CHA | 108A | 9 1 | С | FLAT | Solder | |
| 31 | 10104CHB | 108A | 0 1 | С | FLAT | Tin Plate | |
| 32 | 10104CHC | 108A | 2 1 | С | FLAT | Gold Plate | |

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FAIRCHILD AEROSPACE & DEFENSE

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 10201BCA | 723 | 1 | В | DIP | Solder |
| 2 | 10201BCB | 723 | 9 1 | В | DIP | Tin Plate |
| 3 | 10201BIA | 723 | 0 1 | В | CAN | Solder |
| 4 | 10201BIC | 723 | | В | CAN | Gold Plate |
| 5 | 10201CCA | 723 | 2-1- | С | DIP | Solder |
| 6 | 10201CCB | 723 | | С | DIP | Tin Plate |
| 7 | 10201CIA | 723 | - 1 | С | CAN | Solder |
| 8 | 10201CIC | 723 | - 1 | С | CAN | Gold Plate |
| 9 | 10301BCA | 710 | | В | DIP | Solder |
| 10 | 10301BCB | 710 | | В | DIP | Tin Plate |
| 11 | 10301BGA | 710 | | В | CAN | Solder |
| 12 | 10301BGB | 710 | * I | В | CAN | Tin Plate |
| 13 | 10301BGC | 710 | | В | CAN | Gold Plate |
| 14 | 10301BHA | 710 | 1 | В | FLAT | Solder |
| 15 | 10301BHB | 710 | | В | FLAT | Tin Plate |
| 16 | 10301BHC | 710 | 2-1-4- | В | FLAT | Gold Plate |
| 17 | 10301CCA | 710 | | С | DIP | Solder |
| 18 | 10301CCB | 710 | 1 | С | DIP | Tin Plate |
| 19 | 10301CGA | 710 | 9 1 | С | CAN | Solder |
| 20 | 10301CGB | 710 | 1 | С | CAN | Tin Plate |
| 21 | 10301CGC | 710 | | С | CAN | Gold Plate |
| 22 | 10301CHA | 710 | | С | FLAT | Solder |
| 23 | 10301CHB | 710 | 1 | С | FLAT | Tin Plate |
| 24 | 10301CHC | 710 | | С | FLAT | Gold Plate |
| 25 | 10302BCA | 711 | H . | В | DIP | Solder |
| 26 | 10302BCB | 711 | - H | В | DIP | Tin Plate |
| 27 | 10302BHA | 711 | B II | В | FLAT | Solder |
| 28 | 10302BHB | 711 | | В | FLAT | Tin Plate |
| 29 | 10302BHC | 711 | II . | В | FLAT | Gold Plate |
| 30 | 10302BIA | 711 | iı | В | CAN | Solder |
| 31 | 10302BIC | 711 | 2 11 | В | CAN | Gold Plate |
| 32 | 10302CCA | 711 | II | С | DIP | Solder |

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 10302CCB | 711 | 11 | С | DIP | Tin Plate |
| 2 | 10302CHA | 711 | II I | С | FLAT | Solder |
| 3 | 10302CHB | 711 | H II | С | FLAT | Tin Plate |
| 4 | 10302CHC | 711 | II | С | FLAT | Gold Plate |
| 5 | 10302CIA | 711 | Н | С | CAN | Solder |
| 6 | 10302CIC | 711 | II | С | CAN | Gold Plate |
| 7 | 10304BCA | 111 | II | В | DIP | Solder |
| 8 | 10304BCB | 111 | 11 | В | DIP | Tin Plate |
| 9 | 10304BGA | 111 | 11 | В | CAN | Solder |
| 10 | 10304BGB | 111 | II | В | CAN | Tin Plate |
| 11 | 10304BGC | 111 | II | В | CAN | Gold Plate |
| 12 | 10304BHA | 111 | II | В | FLAT | Solder |
| 13 | 10304BHB | 111 | н | В | FLAT | Tin Plate |
| 14 | 10304BHC | 111 | II I | В | FLAT | Gold Plate |
| 15 | 10304CCA | 111 | П | С | DIP | Solder |
| 16 | 10304CCB | 111 | II | С | DIP | Tin Plate |
| 17 | 10304CGA | 111 | 11 | С | CAN | Solder |
| 18 | 10304CGB | 111 | II I | С | CAN | Tin Plate |
| 19 | 10304CGC | 111 | H | С | CAN | Gold Plate |
| 20 | 10304CHA | 111 | II I | С | FLAT | Solder |
| 21 | 10304CHB | 111 | , II | С | FLAT | Tin Plate |
| 22 | 10304CHC | 111 | Н | С | FLAT | Gold Plate |
| 23 | 10401BAA | 55107 | | В | FLAT | Solder |
| 24 | 10401BAB | 55107 | 2 | В | FLAT | Tin Plate |
| 25 | 10401BAC | 55107 | | В | FLAT | Gold Plate |
| 26 | 10401BCA | 55107 | | В | DIP | Solder |
| 27 | 10401BCB | 55107 | | В | DIP | Tin Plate |
| 28 | 10401CAA | 55107 | g T | С | FLAT | Solder |
| 29 | 10401CAB | 55107 | 9 1 | С | FLAT | Tin Plate |
| 30 | 10401CAC | 55107 | | С | FLAT | Gold Plate |
| 31 | 10401CCA | 55107 | T | С | DIP | Solder |
| 32 | 10401CCB | 55107 | , 1 | С | DIP | Tin Plate |
| 33 | 10402BAA | 55108 | | В | FLAT | Solder |

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish | |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|--|
| 1 | 10402BAB | 55108 | i | В | FLAT | Tin Plate | |
| 2 | 10402BAC | 55108 | T | В | FLAT | Gold Plate | |
| 3 | 10402BCA | 55108 | | В | DIP | Solder | |
| 4 | 10402BCB | 55108 | T | В | DIP | Tin Plate | |
| 5 | 10402CAA | 55108 | . 1 | С | FLAT | Solder | |
| 6 | 10402CAB | 55108 | | С | FLAT | Tin Plate | |
| 7 | 10402CAC | 55108 | 1 | С | FLAT | Gold Plate | |
| 8 | 10402CCA | 55108 | | С | DIP | Solder | |
| 9 | 10402CCB | 55108 | | С | DIP | Tin Plate | |
| 10 | 10403BEA | 9614 | | В | DIP | Solder | |
| 11 | 10403BEB | 9614 | 1 | В | DIP | Tin Plate | |
| 12 | 10403BFA | 9614 | , 1 | В | FLAT | Solder | |
| 13 | 10403BFB | 9614 | | В | FLAT | Tin Plate | |
| 14 | 10403BFC | 9614 | T | В | FLAT | Gold Plate | |
| 15 | 10403CEA | 9614 | | С | DIP | Solder | |
| 16 | 10403CEB | 9614 | L | С | DIP | Tin Plate | |
| 17 | 10403CFA | 9614 | | С | FLAT | Solder | |
| 18 | 10403CFB | 9614 | 1 | С | FLAT | Tin Plate | |
| 19 | 10403CFC | 9614 | 1 | С | FLAT | Gold Plate | |
| 20 | 10404BEA | 9615 | 1 | В | DIP | Solder | |
| 21 | 10404BEB | 9615 | 1 | В | DIP | Tin Plate | |
| 22 | 10404BFA | 9615 | . 1 | В | FLAT | Solder | |
| 23 | 10404BFB | 9615 | 1 | В | FLAT | Tin Plate | |
| 24 | 10404BFC | 9615 | T | В | FLAT | Gold Plate | |
| 25 | 10404CEA | 9615 | о Г | С | DIP | Solder | |
| 26 | 10404CEB | 9615 | . 1 | C | DIP | Tin Plate | |
| 27 | 10404CFA | 9615 | a T | С | FLAT | Solder | |
| 28 | 10404CFB | 9615 | 2 I | С | FLAT | Tin Plate | |
| 29 | 10404CFC | 9615 | T | С | FLAT | Gold Plate | |
| 30 | 10802BCA | 3045 | , II | В | DIP | Solder | |
| 31 | 10802BCB | 3045 | 3 II | В | DIP | Tin Plate | |
| 32 | 10802CCA | 3045 | a II | С | DIP | Solder | |
| 33 | 10802CCB | 3045 | II | С | DIP | Tin Plate | |

JAN QPL STATUS

DIGITAL

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 00101BAB | 5430 | | В | FLAT | Tin Plate |
| 2 | 00101BAC | 5430 | THE I | В | FLAT | Gold Plate |
| 3 | 00101BCB | 5430 | 2 1 | В | DIP | Tin Plate |
| 4 | 00101CAB | 5430 | 9 | С | DIP | Tin Plate |
| 5 | 00101CAC | 5430 | 9 1 | С | FLAT | Gold Plate |
| 6 | 00101CCB | 5430 | 9 1 | С | DIP | Tin Plate |
| 7 | 00102BAB | 5420 | 2 11 | В | FLAT | Tin Plate |
| 8 | 00102BAC | 5420 | Para | В | FLAT | Gold Plate |
| 9 | 00102BCB | 5420 | | В | DIP | Tin Plate |
| 10 | 00102CAB | 5420 | 2 1 | С | FLAT | Tin Plate |
| 11 | 00102CAC | 5420 | | С | FLAT | Gold Plate |
| 12 | 00102CCB | 5420 | 8 1 | С | DIP | Tin Plate |
| 13 | 00103BCB | 5410 | 2 1 | В | DIP | Tin Plate |
| 14 | 00103CCB | 5410 | - i | С | DIP | Tin Plate |
| 15 | 00104BAB | 5400 | 2 1 | В | FLAT | Tin Plate |
| 16 | 00104BAC | -5400 | 2 | В | FLAT | Gold Plate |
| 17 | 00104BCB | 5400 | 9 1 | В | DIP | Tin Plate |
| 18 | 00104CAB | 5400 | 9 1 | С | FLAT | Tin Plate |
| 19 | 00104CAC | 5400 | 3 1 | С | FLAT | Gold Plate |
| 20 | 00104CCB | 5400 | B 1. | С | DIP | Tin Plate |
| 21 | 00105BAB | 5404 | | В | FLAT | Tin Plate |
| 22 | 00105BAC | 5404 | 8 1 | В | FLAT | Gold Plate |
| 23 | 00105BCB | 5404 | - 8 1-1 | В | DIP | Tin Plate |
| 24 | 00105CAB | 5404 | 8 1 | С | FLAT | Tin Plate |
| 25 | 00105CAC | 5404 | -9-1- | С | FLAT | Gold Plate |
| 26 | 00105CCB | 5404 | 9 1 | С | DIP | Tin Plate |
| 27 | 00107BAB | 5401 | 1 | В | FLAT | Tin Plate |
| 28 | 00107BAC | 5401 | 3 L | В | FLAT | Gold Plate |
| 29 | 00107BCB | 5401 | 3 1 | В | DIP | Tin Plate |
| 30 | 00107CAB | 5401 | 3 1 | С | FLAT | Tin Plate |
| 31 | 00107CAC | 5401 | 8 1 | С | FLAT | Gold Plate |
| 32 | 00107CCB | 5401 | 9 1 | С | DIP | Tin Plate |

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FAIRCHILD AEROSPACE & DEFENSE

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 00108BAB | 5405 | 8 1 | В | FLAT | Tin Plate |
| 2 | 00108BAC | 5405 | 8 1 | В | FLAT | Gold Plate |
| 3 | 00108BCB | 5405 | 9 1 | В | DIP | Tin Plate |
| 4 | 00108CAB | 5405 | 9 1 | С | FLAT | Tin Plate |
| 5 | 00108CAC | 5405 | 6 1 | С | FLAT | Gold Plate |
| 6 | 00108CCB | 5405 | 8 1 | С | DIP | Tin Plate |
| 7 | 00109BCB | 5403 | 0 1 | В | DIP | Tin Plate |
| 8 | 00109CCB | 5403 | 3 1 | С | DIP | Tin Plate |
| 9 | 00205BAB | 5474 | 8 1 | В | FLAT | Tin Plate |
| 10 | 00205BAC | 5474 | 8 1 | В | FLAT | Gold Plate |
| 11 | 00205CAB | 5474 | 0 1 | С | FLAT | Tin Plate |
| 12 | 00205CAC | 5474 | 5 1 | C | FLAT | Gold Plate |
| 13 | 00206BAB | 5470 | 8 1 | В | FLAT | Tin Plate |
| 14 | 00206CAB | 5470 | 8 1 | С | FLAT | Tin Plate |
| 15 | 00301BAB | 5440 | 9 1 | В | FLAT | Tin Plate |
| 16 | 00301BAC | 5440 | 9 1 | В | FLAT | Gold Plate |
| 17 | 00301BCB | 5440 | 8 I | В | DIP | Tin Plate |
| 18 | 00301CAB | 5440 | 0 1 | С | FLAT | Tin Plate |
| 19 | 00301CAC | 5440 | 0 1 | С | FLAT | Gold Plate |
| 20 | 00301CCB | 5440 | 1 | С | DIP | Tin Plate |
| 21 | 00303BAB | 5438 | | В | FLAT | Tin Plate |
| 22 | 00303BAC | 5438 | ₹ 1 | В | FLAT | Gold Plate |
| 23 | 00303CAB | 5438 | 8 1 | С | FLAT | Tin Plate |
| 24 | 00303CAC | 5438 | 9 1 | С | FLAT | Gold Plate |
| 25 | 00401BAB | 5402 | 1 . | В | FLAT | Tin Plate |
| 26 | 00401BAC | 5402 | 4 1 | В | FLAT | Gold Plate |
| 27 | 00401BCB | 5402 | 8 1 | В | DIP | Tin Plate |
| 28 | 00401CAB | 5402 | 2 1 | С | FLAT | Tin Plate |
| 29 | 00401CAC | 5402 | 9 1 | С | FLAT | Gold Plate |
| 30 | 00401CCB | 5402 | 1 | С | DIP | Tin Plate |
| 31 | 00404BCB | 5427 | 6 1 | В | DIP | Tin Plate |
| 32 | 00404CCB | 5427 | 0 1 | С | DIP | Tin Plate |

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 00701BAB | 5486 | 8 1 | В | FLAT | Tin Plate |
| 2 | 00701BAC | 5486 | 9 1 | В | FLAT | Gold Plate |
| 3 | 00701CAB | 5486 | 5 1 | С | FLAT | Tin Plate |
| 4 | 00701CAC | 5486 | 0 1 | С | FLAT | Gold Plate |
| 5 | 00801BAB | 5406 | 5 1 | В | FLAT | Tin Plate |
| 6 | 00801BAC | 5406 | 0 1 | В | FLAT | Gold Plate |
| 7 | 00801CAB | 5406 | 8 1 | С | FLAT | Tin Plate |
| 8 | 00801CAC | 5406 | 5 11 | С | FLAT | Gold Plate |
| 9 | 00802BAB | 5416 | 8 T | В | FLAT | Tin Plate |
| 10 | 00802BAC | 5416 | 8 1 | В | FLAT | Gold Plate |
| 11 | 00802CAB | 5416 | 10 1 | С | FLAT | Tin Plate |
| 12 | 00802CAC | 5416 | 3 1 | С | FLAT | Gold Plate |
| 13 | 00803BAB | 5407 | 8 1 | В | FLAT | Tin Plate |
| 14 | 00803BAC | 5407 | 5 1 | В | FLAT | Gold Plate |
| 15 | 00803CAB | 5407 | a 11 | С | FLAT | Tin Plate |
| 16 | 00803CAC | 5407 | 8 1 | С | FLAT | Gold Plate |
| 17 | 00804BAB | 5417 | 8 1 | В | FLAT | Tin Plate |
| 18 | 00804BAC | 5417 | a 1 | В | FLAT | Gold Plate |
| 19 | 00804CAB | 5417 | 0 1 | С | FLAT | Tin Plate |
| 20 | 00804CAC | 5417 | 9 1 | С | FLAT | Gold Plate |
| 21 | 01601BCB | 5408 | 8 1 | В | DIP | Tin Plate |
| 22 | 01601CCB | 5408 | 6 1 | С | DIP | Tin Plate |
| 23 | 01602BCB | 5409 | 0 1 | В | DIP | Tin Plate |
| 24 | 01602CCB | 5409 | a 1 | С | DIP | Tin Plate |
| 25 | 02301BAB | 54H30 | 8 1 | В | FLAT | Tin Plate |
| 26 | 02301BAC | 54H30 | 0 1 | В | FLAT | Gold Plate |
| 27 | 02301BCB | 54H30 | .a =1 = | В | DIP | Tin Plate |
| 28 | 02301CAB | 54H30 | 3 I | С | FLAT | Tin Plate |
| 29 | 02301CAC | 54H30 | 9 1 | С | FLAT | Gold Plate |
| 30 | 02301CCB | 54H30 | o H | С | ĎIP | Tin Plate |
| 31 | 02302BCB | 54H20 | 8 1 | В | DIP | Tin Plate |
| 32 | 02302CCB | 54H20 | 0 1 | С | DIP | Tin Plate |

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|-------------------|------------------|---------|-------------|
| 1 | 02303BCB | 54H10 | a I | В | DIP | Tin Plate |
| 2 | 02303CCB | 54H10 | pr I | С | DIP | Tin Plate |
| 3 | 02304BCB | 54H00 | 9 1 | В | DIP | Tin Plate |
| 4 | 02304CCB | 54H00 | 8 1 | С | DIP | Tin Plate |
| 5 | 02305BAB | 54H04 | 3 [] | В | FLAT | Tin Plate |
| 6 | 02305BAC | 54H04 | 9 1 | В | FLAT | Gold Plate |
| 7 | 02305BCB | 54H04 | a I | В | DIP | Tin Plate |
| 8 | 02305CAB | 54H04 | 0 1 | С | FLAT | Tin Plate |
| 9 | 02305CAC | 54H04 | 8 1 | С | FLAT | Gold Plate |
| 10 | 02305CCB | 54H04 | 5 0 1 | С | DIP | Tin Plate |
| 11 | 02307BCB | 54H22 | 8 1 | В | DIP | Tin Plate |
| 12 | 02307CCB | 54H22 | | С | DIP | Tin Plate |
| 13 | 03001BCB | 930 | 1 I | В | DIP | Tin Plate |
| 14 | 03001CCB | 930 | 8 1 | С | DIP | Tin Plate |
| 15 | 03004BCB | 946 | 5 1 | В | DIP | Tin Plate |
| 16 | 03004CCB | 946 | 9 I | С | DIP | Tin Plate |
| 17 | 03005BCB | 962 | e 1 | В | DIP | Tin Plate |
| 18 | 03005CCB | 962 | 8 1 | C | DIP | Tin Plate |
| 19 | 30001BAB | 54LS00 | a II | В | FLAT | Tin Plate |
| 20 | 30001BAC | 54LS00 | a II | В | FLAT | Gold Plate |
| 21 | 30001CAB | 54LS00 | a II | С | FLAT | Tin Plate |
| 22 | 30001CAC | 54LS00 | B II | С | FLAT | Gold Plate |
| 23 | 30003BAB | 54LS04 | a II | В | FLAT | Tin Plate |
| 24 | 30003BAC | 54LS04 | э п | В | FLAT | Gold Plate |
| 25 | 30003CAB | 54LS04 | a III | С | FLAT | Tin Plate |
| 26 | 30003CAC | 54LS04 | 0 H | С | FLAT | Gold Plate |
| 27 | 30005BAB | 54LS10 | 2 H | В | FLAT | Tin Plate |
| 28 | 30005BAC | 54LS10 | 0 11 | В | FLAT | Gold Plate |
| 29 | 30005CAB | 54LS10 | 6 H | С | FLAT | Tin Plate |
| 30 | 30005CAC | 54LS10 | 0 II | С | FLAT | Gold Plate |
| 31 | 30007BAB | 54LS20 | 3 II | В | FLAT | Tin Plate |
| 32 | 30007BAC | 54LS20 | 5 H | В | FLAT | Gold Plate |

JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|---------|---------|-------------|
| 1 | 30007CAB | 54LS20 | П | С | FLAT | Tin Plate |
| 2 | 30007CAC | 54LS20 | 0 11 | С | FLAT | Gold Plate |
| 3 | 30009BAB | 54LS30 | 8 II | В | FLAT | Tin Plate |
| 4 | 30009BAC | 54LS30 | 9 11 | В | FLAT | Gold Plate |
| 5 | 30009CAB | 54LS30 | S 11 | С | FLAT | Tin Plate |
| 6 | 30009CAC | 54LS30 | 9 11 | С | FLAT | Gold Plate |
| 7 | 30103BEB | 54LS112 | 6 H | В | DIP | Tin Plate |
| 8 | 30103CEB | 54LS112 | ○ II | С | DIP | Tin Plate |
| 9 | 30105BEB | 54LS114 | Э П | В | DIP | Tin Plate |
| 10 | 30105CEB | 54LS114 | े ॥ | С | DIP | Tin Plate |
| 11 | 30106BEB | 54LS174 | 8 | В | DIP | Tin Plate |
| 12 | 30106CEB | 54LS174 | 9 II | С | DIP | Tin Plate |
| 13 | 30109BEB | 54LS109 | E II | В | DIP | Tin Plate |
| 14 | 30109BFB | 54LS109 | 9 п | В | FLAT | Tin Plate |
| 15 | 30109CEB | 54LS109 | 8 11 | С | DIP | Tin Plate |
| 16 | 30109CFB | 54LS109 | Э 11 | С | FLAT | Tin Plate |
| 17 | 30301BAB | 54LS02 | 9 11 | В | FLAT | Tin Plate |
| 18 | 30301BAC | 54LS02 | э н | В | FLAT | Gold Plate |
| 19 | 30301CAB | 54LS02 | 8 II | С | FLAT | Tin Plate |
| 20 | 30301CAC | 54LS02 | 9 11 | С | FLAT | Gold Plate |
| 21 | 30302BCB | 54LS27 | 0 II | В | DIP | Tin Plate |
| 22 | 30302BAB | 54LS27 | ll l | В | FLAT | Tin Plate |
| 23 | 30302BAC | 54LS27 | 8 11 | В | FLAT | Gold Plate |
| 24 | 30302CCB | 54LS27 | 8 II | С | DIP | Tin Plate |
| 25 | 30302CAB | 54LS27 | П | С | FLAT | Tin Plate |
| 26 | 30302CAC | 54LS27 | 3 11 | С | FLAT | Gold Plate |
| 27 | 30501BCB | 54LS32 | 8 11 | В | DIP | Tin Plate |
| 28 | 30501BAB | 54LS32 | 8 II | В | FLAT | Tin Plate |
| 29 | 30501BAC | 54LS32 | 0 H | В | FLAT | Gold Plate |
| 30 | 30501CCB | 54LS32 | 0 11 | С | DIP | Tin Plate |
| 31 | 30501CAB | 54LS32 | 8 H | С | FLAT | Tin Plate |
| 32 | 30501CAC | 54LS32 | 8 II | С | FLAT | Gold Plate |

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JAN QPL STATUS

| Item | DEVICE NO. JM38510/ | Industry Basic Type | Part I or II QPL | Process Level | Package | Lead Finish |
|------|------------------------|------------------------|---------------------|------------------|---------|-------------|
| 1 | 30701BEB | 54LS138 | H T | В | DIP | Tin Plate |
| 2 | 30701BFB | 54LS138 | - 11 | В | FLAT | Tin Plate |
| 3 | 30701CEB | 54LS138 | - 11 | С | DIP | Tin Plate |
| 4 | 30701CFB | 54LS138 | 11 | С | FLAT | Tin Plate |
| 5 | 30702BEB | 54LS139 | 11 | В | DIP | Tin Plate |
| 6 | 30702CEB | 54LS139 | II | С | DIP | Tin Plate |
| 7 | 31001BCB | 54LS11 | 11 | В | DIP | Tin Plate |
| 8 | 31001BAB | 54LS11 | 11 | В | FLAT | Tin Plate |
| 9 | 31001BAC | 54LS11 | 11 | В | FLAT | Gold Plate |
| 10 | 31001CCB | 54LS11 | II | С | DIP | Tin Plate |
| 11 | 31001CAB | 54LS11 | II II | С | FLAT | Tin Plate |
| 12 | 31001CAC | 54LS11 | 11 | С | FLAT | Gold Plate |
| 13 | 31003BAB | 54LS21 | II | В | FLAT | Tin Plate |
| 14 | 31003BAC | 54LS21 | II. | В | FLAT | Gold Plate |
| 15 | 31003CAB | 54LS21 | 11 | С | FLAT | Tin Plate |
| 16 | 31003CAC | 54LS21 | 11 | С | FLAT | Gold Plate |
| 17 | 31004BCB | 54LS08 | II | В | DIP | Tin Plate |
| 18 | 31004BAB | 54LS08 | 11 | В | FLAT | Tin Plate |
| 19 | 31004BAC | 54LS08 | II | В | FLAT | Gold Plate |
| 20 | 31004CCB | 54LS08 | , II | С | DIP | Tin Plate |
| 21 | 31004CAB | 54LS08 | II | С | FLAT | Tin Plate |
| 22 | 31004CAC | 54LS08 | II - | С | FLAT | Gold Plate |

JAN QPL STATUS

DIODE QPL-19500

| Item | 1 | Item | | Item | | Iten | 1 |
|------|-------------|------|----------------|------|----------------|------|---------------|
| 1 | 1N251 JAN | 30 | 1N914 JTX | 59 | 1N971B-1 JTX* | 88 | 1N4306 JTX |
| 2 | 1N457 JAN | 31 | 1N962B-1 JAN* | 60 | 1N971B-1 JTXV* | 89 | 1N4307 JAN |
| 3 | 1N458 JAN | 32 | 1N962B-1 JTX* | 61 | 1N972B-1 JAN* | 90 | 1N4307 JTX |
| 4 | 1N459 JAN | 33 | 1N962B-1 JTXV* | 62 | 1N972B-1 JTX* | 91 | 1N4307 JTXV |
| 5 | 1N483B JAN | 34 | 1N963B-1 JAN* | 63 | 1N972B-1 JTXV* | 92 | 1N4376 JAN |
| 6 | 1N483B JTX | 35 | 1N963B-1 JTX* | 64 | 1N973B-1 JAN* | 93 | 1N4376 JTX |
| 7 | 1N485B JAN | 36 | 1N963B-1 JTXV* | 65 | 1N973B-1 JTX* | 94 | 1N4454 JAN |
| 8 | 1N485B JTX | 37 | 1N964B-1 JAN* | 66 | 1N973B-1 JTXV* | 95 | 1N4454 JTX |
| 9 | 1N486B JAN | 38 | 1N964B-1 JTX* | 67 | 1N3064 JAN | 96 | 1N4454 JTXV |
| 10 | 1N486B JTX | 39 | 1N964B-1 JTXV* | 68 | 1N3064 JTX | 97 | 1N4454-1 JAN* |
| 11 | 1N747A JAN | 40 | 1N965B-1 JAN* | 69 | 1N3595 JAN | 98 | 1N4454-1 JTX* |
| 12 | 1N747A JTX | 41 | 1N965B-1 JTX* | 70 | 1N3595 JTX | 99 | 1N4454-1 JTXV |
| 13 | 1N747A JTXV | 42 | 1N965B-1 JTXV* | 71 | 1N3595 JTXV | 100 | 1N5768 JAN |
| 14 | 1N748A JAN | 43 | 1N966B-1 JAN* | 72 | 1N3600 JAN | 101 | 1N5768 JTX |
| 15 | 1N748A JTX | 44 | 1N966B-1 JTX* | 73 | 1N3600 JTX | 102 | 1N5768 JTXV |
| 16 | 1N748A JTXV | 45 | 1N966B-1 JTXV* | 74 | 1N3600 JTXV | 103 | 1N5770 JAN |
| 17 | 1N749A JAN | 46 | 1N967B-1 JAN* | 75 | 1N4148 JAN | 104 | 1N5770 JTX |
| 18 | 1N749A JTX | 47 | 1N967B-1 JTX* | 76 | 1N4148 JTX | 105 | 1N5770 JTXV |
| 19 | 1N749A JTXV | 48 | 1N967B-1 JTXV* | 77 | 1N4148 JTXV | 106 | 1N5772 JAN |
| 20 | 1N750A JAN | 49 | 1N968B-1 JAN* | 78 | 1N4148-1 JAN* | 107 | 1N5772 JTX |
| 21 | 1N750A JTX | 50 | 1N968B-1 JTX* | 79 | 1N4148-1 JTX* | 108 | 1N5772 JTXV |
| 22 | 1N750A JTXV | 51 | 1N968B-1 JTXV* | 80 | 1N4148-1 JTXV* | 109 | 1N5774 JAN |
| 23 | 1N751A JAN | 52 | 1N969B-1 JAN* | 81 | 1N4150 JAN | 110 | 1N5774 JTX |
| 24 | 1N751A JTX | 53 | 1N969B-1 JTX* | 82 | 1N4150 JTX | 111 | 1N5774 TXV |
| 25 | 1N751A JTXV | 54 | 1N969B-1 JTXV* | 83 | 1N4150 JTXV | 112 | 1N6100 JAN |
| 26 | 1N752A JAN | 55 | 1N970B-1 JAN* | 84 | 1N4150-1 JAN | 113 | 1N6100 JTX |
| 27 | 1N752A JTX | 56 | 1N970B-1 JTX* | 85 | 1N4150-1 JTX | 114 | 1N6100 JTXV |
| 28 | 1N752A JTXV | 57 | 1N970B-1 JTXV* | 86 | 1N4150-1 JTXV | | |
| 29 | 1N914 JAN | 58 | 1N971B-1 JAN* | 87 | 1N4306 JAN | | |

^{*} Utilizes metallurgical bond.

JAN QPL STATUS

TRANSISTOR QPL-19500

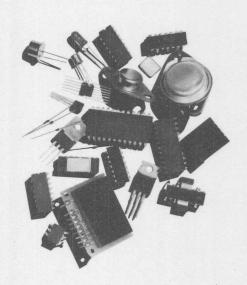
| Item | | Item | | Item | | Item | |
|------|------------|------|-------------|------|--------------|--------|-------------|
| 1 | 2N706 JAN | 22 | 2N2218A JAN | 43 | 2N2369A JAN | 64 | 2N2906 JTX |
| 2 | 2N708 JAN | 23 | 2N2218A JTX | 44 | 2N2369A JTX | 65 | 2N2906 TXV |
| 3 | 2N708 JTX | 24 | 2N2218A TXV | 45 | 2N2369A TXV | 66 | 2N2906A JAN |
| 4 | 2N718A JAN | 25 | 2N2219 JAN | 46 | 2N2481 JAN | 67 | 2N2906A JTX |
| 5 | 2N718A JTX | 26 | 2N2219 JTX | 47 | 2N2481 JTX | 68 | 2N2906A TX |
| 6 | 2N718A TXV | 27 | 2N2219 TXV | 48 | 2N2484 JAN | 69 | 2N2907 JAN |
| 7 | 2N744 JAN | 28 | 2N2219A JAN | 49 | 2N2484 JTX | 70 | 2N2907 JTX |
| 8 | 2N914 JAN | 29 | 2N2219A JTX | 50 | 2N2484 TXV | 71 | 2N2907 TXV |
| 9 | 2N914 JTX | 30 | 2N2219A TXV | 51 | 2N2904 JAN | 72 | 2N2907A JAI |
| 10 | 2N918 JAN | 31 | 2N2221 JAN | 52 | 2N2904 JTX | 73 | 2N2907A JT |
| 11 | 2N918 JTX | 32 | 2N2221 JTX | 53 | 2N2904 TXV | 74 | 2N2907A TX |
| 12 | 2N918 TXV | 33 | 2N2221 TXV | 54 | 2N2904A JAN | 75 | 2N2919 JAN |
| 13 | 2N930 JAN | 34 | 2N2221A JAN | 55 | 2N2904A JTX | 76 | 2N2919 JTX |
| 14 | 2N930 JTX | 35 | 2N2221A JTX | 56 | 2N2904A TXV | 77 | 2N2919 TXV |
| 15 | 2N1132 JAN | 36 | 2N2221A TXV | 57 | 2N2905 JAN | 78 | 2N2920 JAN |
| 16 | 2N1613 JAN | 37 | 2N2222 JAN | 58 | 2N2905 JTX | 79 | 2N2920 JTX |
| 17 | 2N1613 JTX | 38 | 2N2222 JTX | 59 | 2N2905S TXV | 80 | 2N2920 TXV |
| 18 | 2N1613 TXV | 39 | 2N2222 TXV | 60 | 2N2905A JAN | 81 | 2N3013 JAN |
| 19 | 2N2218 JAN | 40 | 2N2222A JAN | 61 | 2N2905A JTX | 82 | 2N3013 JTX |
| 20 | 2N2218 JTX | 41 | 2N2222A JTX | 62 | 2N2905SA TXV | 250138 | 21 21 |
| 21 | 2N2218 TXV | 42 | 2N2222A TXV | 63 | 2N2906 JAN | ENDERN | |

UPCOMING QUALIFICATIONS

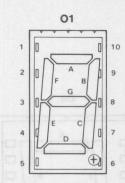
Fairchild plans to obtain numerous additional device qualifications. Although QPL attainment dates cannot be scheduled with accuracy, the following Fairchild products are expected to be qualified in the near future. Budgetary quotations are available:

| Item | Jan Part Number | Fairchild Part Number | Package | Comments |
|------|--------------------|-----------------------|----------|-------------------------------|
| 1 | M38510/31101 | 54LS85 | DIP/FLAT | HALENENS S |
| 2 | M38510/30001 | 54LS00 | DIP | Part I QPL |
| 3 | M38510/30301 | 54LS02 | DIP | Part I QPL |
| 4 | M38510/31003 | 54LS21 | DIP | Part I QPL |
| 5 | M38510/30901 | 54LS151 | DIP/FLAT | VXT ASTEMS 0 |
| 6 | M38510/30902 | 54LS153 | DIP/FLAT | MAL NETUS IT |
| 7 | M38510/30903 | 54LS157 | DIP/FLAT | MAL NESTS B |
| 8 | M38510/30904 | 54LS158 | DIP/FLAT | A75. 11 (2-15. 3) |
| 9 | M38510/30905 | 54LS251 | DIP/FLAT | Mar erank 0 |
| 10 | M38510/30908 | 54LS253 | DIP/FLAT | XTL 81 <u>9</u> 45 1 |
| 11 | M38510/30102 | 54LS74 | DIP/FLAT | YXT DIOMS S |
| 12 | M38510/30107 | 54LS175 | DIP/FLAT | 3 2ME38 JAM |
| 13 | M38510/30106 | 54LS174 | DIP/FLAT | \$11,00 <u>0</u> 00 £ |
| 14 | M38510/01701 | 54174 | DIP/FLAT | MAK SETTAS E |
| 15 | M38510/01702 | 54175 | DIP/FLAT | MAL CHAINS & |
| 16 | M38510/01306 | 54161 | DIP/FLAT | XTL SPAEMS T |
| 17 | M38510/30602 | 54LS195 | DIP/FLAT | VXY STAME 8 |
| 18 | M38510/15802 | 9317 | DIP/FLAT | MALSTEWAL 6 |
| 19 | M38510/30906 | 54LS257 | DIP/FLAT | XTL 0 FEERING - 1 |
| 20 | M38510/30907 | 54LS258 | DIP/FLAT | 製製了 518<u>3</u>218 2 1 |
| 21 | MIL-S-19500/2N5302 | 2N5302 | | JAN/JTX/JTXV |

| PRODUCT INDEX | 1 |
|--|----|
| DIODES | 2 |
| TRANSISTORS | 3 |
| OPTOELECTRONICS | 4 |
| CHARGE-COUPLED DEVICES | 5 |
| HYBRIDS | 6 |
| LINEAR | 7 |
| INTERFACE | 8 |
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| FAIRCHILD FIELD SALES OFFICES, REPRESENTATIVES AND DISTRIBUTORS | 15 |

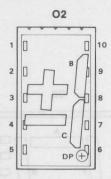


OPTOELECTRONICS



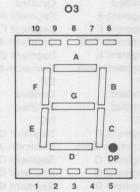
PIN FND350/357/360/367

- 1 Common-Cathode
- 2 Segment F
- 3 Segment G
- 4 Segment E
- 5 Segment D
- 6 Common-Cathode
- 7 Decimal Point
- 8 Segment C
- 9 Segment B
- 10 Segment A



PIN FND351/358/361/368

- 1 Common-Cathode
- 2 Plus Sign
- 3 Minus Sign
- 4 NC
- 5 Omitted
- 6 Common-Cathode
- 7 Decimal Point
- 8 Segment C
- 9 Segment B
- 10 NC



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| PIN | 547/557/567 |
|-----|-------------|
| 1 | Segment E |
| 0 | C |

2 Segment D 3 Comm-Anod

FND507/537

- 3 Comm-Anode4 Segment C
- 5 Decimal Point
- 6 Segment B
- 7 Segment A8 Comm-Anode
- 9 Segment F
- 10 Segment G

FND500/530 540/550/560

- Segment E Segment D
- Comm-Cathode
- Segment C Decimal Point
- Segment B
- Segment A Comm-Cathode
- Segment F Segment G

- PIN 541/551/561

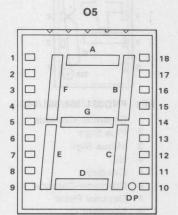
 1 Minus
 2 Cathode ±
 3 Segment C
 4 Cathode 1/DP
 5 Decimal Point
 - 6 Segment B 7 Cathode 1/DP

FND501/531

- 8 Cathode ± 9 Plus
- 10 NC

FND508/538 548/558/568 Minus

- Anode ± Segment C Anode 1/DP
- Decimal Point Segment B
- Anode 1/DP Anode ±
- Plus



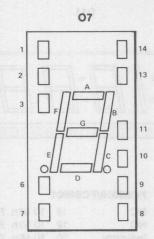
| [| | | V | V V | | 1 |
|---|-----|------|-------|-----|----|----|
| 1 | | | A | | 70 | 11 |
| 2 | | | | | | 1: |
| 3 | | F | | В | | 16 |
| 4 | | 158 | G | | | 18 |
| 5 | 0 - | 7 | -000 | | | 14 |
| 6 | | | | | | 1; |
| 7 | | E | | c | | 1: |
| 8 | | | D | | | 1 |
| 9 | | | KONT | | | 10 |
| | ODP | tolo | 9 isa | | 15 | |

| PIN | FND800 | FND807 |
|-----|---------------|---------------|
| 1 | Omitted | Omitted |
| 2 | Segment A | Segment A |
| 3 | Segment F | Segment F |
| 4 | Common-Cath. | Common-Anode |
| 5 | Segment E | Segment E |
| 6 | Common-Cath. | Common-Anode |
| 7 | NC | NC |
| 8 | Omitted | Omitted |
| 9 | Omitted | Omitted |
| 10 | Decimal Point | Decimal Point |
| 11 | Segment D | Segment D |
| 12 | Common-Cath. | Common-Anode |
| 13 | Segment C | Segment C |
| 14 | Segment G | Segment G |
| 15 | Segment B | Segment B |
| 16 | Omitted | Omitted |
| 17 | Common-Cath. | Common-Anode |
| 18 | Omitted | Omitted |
| | | |

| PIN | FND850 | FND847 |
|-----|--------------|--------------|
| 1 | Omitted | Omitted |
| 2 | Segment A | Segment A |
| 3 | Segment F | Segment F |
| 4 | Common-Cath. | Common-Anode |
| 5 | Segment E | Segment E |
| 6 | Common-Cath. | Common-Anode |
| 7 | DP | DP |
| 8 | Omitted | Omitted |
| 9 | Omitted | Omitted |
| 10 | NC | NC |
| 11 | Segment D | Segment D |
| 12 | Common-Cath. | Common-Anode |
| 13 | Segment C | Segment C |
| 14 | Segment G | Segment G |
| 15 | Segment B | Segment B |
| 16 | Omitted | Omitted |
| 17 | Common-Cath. | Common-Anode |
| 18 | Omitted | Omitted |

3 therepall 1

OPTOELECTRONICS



PIN MAN71A

1 Cathode A 2 Cathode F

3 Common-Anode

4 No pin 5 No pin

6 NC 7 Cathod

7 Cathode E 8 Cathode D

9 Common-Anode

10 Cathode C

11 Cathode G 12 No pin

13 Cathode B

14 Common-Anode

MAN72A

Cathode A Cathode F

Common-Anode

No pin No pin

Cathode DP Cathode E

Cathode D

NC

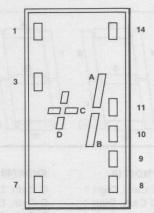
Cathode C

Cathode G No pin

Cathode B

Common-Anode

08



PIN MAN73A

1 Anode C, D

2 No pin

3 Anode C, D

4 No pin

5 No pin

6 No pin

7 Cathode D 8 Cathode C

9 NC

10 Cathode B

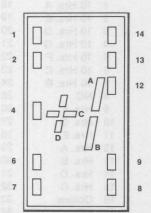
11 Cathode A

12 No pin

13 No pin

14 Anode A, B

09

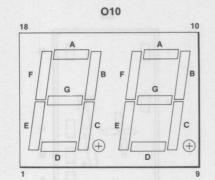


PIN MAN74A

- 1 Anode F
- 2 Anode G
- 3 No pin
- 4 Common-Cathode
- 5 No pin
- 6 Anode E
- 7 Anode D
- 8 Anode C
- 9 Anode DP 10 No pin
- 11 No pin
- 12 Common-Cathode
- 13 Anode B
- 14 Anode A

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

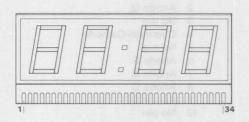
OPTOELECTRONICS



011

| PIN | FND6710 | FND6740 |
|-----|------------------|------------------|
| 1 | E Cath. Digit 1 | C Cath. Digit 1 |
| 2 | D Cath. Digit 1 | D Cath. Digit 1 |
| 3 | C Cath. Digit 1 | B Cath. Digit 1 |
| 4 | DP Cath. Digit 1 | DP Cath. Digit 1 |
| 5 | E Cath. Digit 2 | E Cath. Digit 2 |
| 6 | D Cath. Digit 2 | D Cath. Digit 2 |
| 7 | G Cath. Digit 2 | G Cath. Digit 2 |
| 8 | C Cath. Digit 2 | C Cath. Digit 2 |
| 9 | DP Cath. Digit 2 | DP Cath. Digit 2 |
| 10 | B Cath. Digit 2 | B Cath. Digit 2 |
| 11 | A Cath. Digit 2 | A Cath. Digit 2 |
| 12 | F Cath. Digit 2 | F Cath. Digit 2 |
| 13 | Digit 2 Anode | Digit 2 Anode |
| 14 | Digit 1 Anode | Digit 1 Anode |
| 15 | B Cath. Digit 1 | A Cath. Digit 1 |
| 16 | A Cath. Digit 1 | NC |
| 17 | G Cath. Digit 1 | NC |
| 18 | F Cath. Digit 1 | NC |

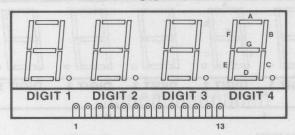
| PIN | FCS8000/F | CS8001 | |
|-----|-----------|--------|-----------|
| 1 | NC | 18 | 10 Min. F |
| 2 | NC | 19 | 10 Min. E |
| 3 | Indicator | 20 | 10 Min. G |
| 4 | NC | 21 | 10 Min. A |
| 5 | Indicator | 22 | 10 Min. D |
| 6 | 10 Hrs. C | 23 | 10 Min. B |
| 7 | 10 Hrs. B | 24 | 10 Min. C |
| 8 | NC | 25 | NC |
| 9 | Hrs. F | 26 | Min. F |
| 10 | Hrs. G | 27 | Min. E |
| 11 | Hrs. E | 28 | Min. G |
| 12 | Hrs. A | 29 | Min. A |
| 13 | Hrs. B | 30 | Min. B |
| 14 | Hrs. D | 31 | Min. C |
| 15 | Hrs. C | 32 | Min. D |
| 16 | Colons | 33 | NC |
| 17 | NC | 34 | VLED |
| | | | |



| PIN | FCS8024/FC | \$8025 | |
|-----|------------|--------|-----------|
| 1 | 10 Hrs. A | 18 | 10 Min. F |
| 2 | 10 Hrs. E | 19 | 10 Min. E |
| 3 | 10 Hrs. D | 20 | 10 Min. G |
| 4 | 10 Hrs. G | 21 | 10 Min. A |
| 5 | 10 Hrs. F | 22 | 10 Min. D |
| 6 | 10 Hrs. C | 23 | 10 Min. B |
| 7 | 10 Hrs. B | 24 | 10 Min. C |
| 8 | NC | 25 | NC |
| 9 | Hrs. F | 26 | Min. F |
| 10 | Hrs. G | 27 | Min. E |
| 11 | Hrs. E | 28 | Min. G |
| 12 | Hrs. A | 29 | Min. A |
| 13 | Hrs. B | 30 | Min. B |
| 14 | Hrs. D | 31 | Min. C |
| 15 | Hrs. C | 32 | Min. D |
| 16 | Colons | 33 | NC |
| 17 | NC | 34 | VLED |

OPTOELECTRONICS

013



PIN FNA5420

1 Digit 1 Com. Anode 2 Seg. G

3 NC

4 Seg. F 5 Seg. D

6 Digit 2 Com. Anode Digit 2 Com. Cath.

7 Seg. A 8 Seg. B

9 Digit 3 Com. Anode Digit 3 Com. Cath. 10 RNDP

11 Seg. C 12 Seg. E

13 Digit 4 Com. Anode

FNA5427

Digit 1 Com. Cath. Seg. G "Plus" Sign Anode

NC Seg. F

Seg. D "Minus" Sign Anode

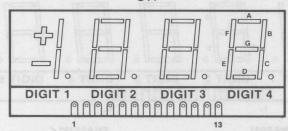
Seg. A Seg. B Seg. A

RHDP Seg. C

Seg. E Digit 4 Com. Cath.

Preliminary Pin Assignment

014



PIN FNA5428

1 Digit 1 Com. Anode

2 Seg. G "Plus" Sign Cathode

3 NC

4 Seg. F

5 Seg. D "Minus" Sign Cath.

6 Digit 2 Com. Anode

7 Seg. A

8 Seg. B 9 Digit 3 Com. Anode

10 RHDP 11 Seg. C

12 Seg. E 13 Digit 4 Com. Anode

Preliminary Pin Assignment

FNA5421

Digit 1 Com. Cath.

Seg. G LHDP

Seg. F Seg. D

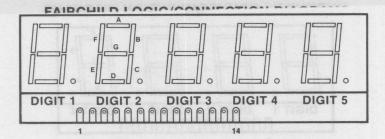
Digit 2 Com. Cath.

Seg. A Seg. B

Digit 3 Com. Cath.

RHDP Seg. C Seg. E

Digit 4 Com. Cath.



PIN FNA5520*

- 1 LHDP Anodes
- 2 Digit 1 Com. Cathodes
- 3 Seg. G, "Plus" Sign Anodes
- 4 Seg. F Anodes
- 5 Seg. D, "Minus" Sign Anodes
- 6 Digit 2 com. Cathodes
- 7 Seg. A Anodes
- 8 Seg. B Anodes
- 9 Digit 3 Com. Cathodes
- 10 RHDP Anodes
- 11 Seg. C Anodes
- 12 Seg. E Anodes
- 13 Digit 4 Com. Cathodes
- 14 Digit 5 Com. Cathodes

FNA5527*

LHDP Cathodes

Digit 1 Com. Anode

Seg. G, "Plus Sign Cath.

Seg. F Cath.

Seg. D, "Minus" Sign Cath.

Digit 2 Com. Anode

Seg. A Cath.

Seg. B Cath.

Digit 3 Com. Anode

RHDP Cath.

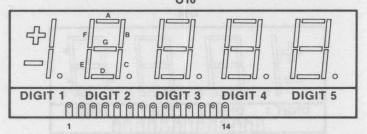
Seg. C Cath.

Seg. E Cath.

Digit 4 Com. Anode

Digit 5 Com. Anode

016



PIN FNA5521

- 1 NC
- 2 Com. Cath. Digit 1
- 3 Seg. G/"Plus" Ind. Anodes
- 4 Seg. F Anodes
- 5 Seg. D Anodes/Minus
- 6 Com. Cath. Digit 2
- 7 Con A Annadan
- 7 Seg. A Anodes8 Seg. B Anodes
- 9 Com. Cath. Digit 3
- 10 DP Anodes
- 11 Seg. C Anodes
- 12 Seg. E Anodes
- 13 Com. Cath. Digit 4
- 14 Com. Cath. Digit 5

FNA5528*

NC

Com. Anode Digit 1

Seg. G, "Plus" Sign Cath.

Seg. F Cath.

Seg. D Cath.

Digit 2 Com. Anode

Seg. A Cath.

Seg. B Cath.

Digit 3 Com. Anode

DP Cath.

Seg. C Cath.

Seg. E Cath.

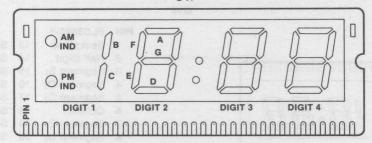
Digit 4 Com. Anode

Digit 5 Com. Anode

*Preliminary Pin Assignment

OPTOELECTRONICS

017



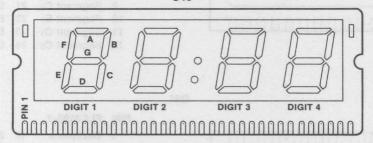
PIN FCS6400

- Com. Cath. Digits 1 & 2
- 2 NC
- N/C 3
- 4 Segment A1 Anode
- 5 Segment F1 Anode
- 6 Segment G1 Anode Segment E1 Anode
- 7
- 8 Segment D1
- 9 Segment C1 Anode
- 10 Segment B1 Anode
- 11 Segment F2 Anode
- 12 Segment G2 Anode

- Segment A2 Anode
- Segment B2 Anode 14
- 15 Segment E2 Anode
- 16 Segment D2 Anode
- 17 Segment C2 Anode
- 18 Colon Anode
- 19 Colon Anode
- 20 Segment F3 Anode
- 21 Segment G3 Anode 22 Segment A3 Anode
- 23 Segment B3 Anode
- 24 Segment D3 Anode

- Segment E3 Anode
- 26 Segment C3
- Segment F4 27
- Segment G4 Anode
- Segment A4 Anode
- 30 Segment B4 Anode
- 31 Segment E4 Anode
- 32 Segment D4 Anode
- 33 Segment C4 Anode
- 34 Com. Cath. Digits 3 & 4

018



FCS6401

- Com. Cath. Digits 1 & 2 1
- PM IND. Anode 2
- 3 AM IND.
- N/C 4
- 5 N/C
- 6 N/C
- 7 N/C 8 N/C
- 9 Segment C1 Anode
- 10 Segment B1 Anode
- 11 Segment F2 Anode
- 12 Segment G2 Anode

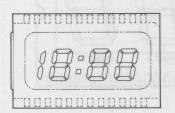
- Segment A2 Anode
- Segment B2 Anode
- Segment E2 Anode
- Segment D2 Anode
- Segment C2 Anode
- 17
- 18 Colon Anode
- 19 Colon Anode 20 Segment F3 Anode
- Segment G3 Anode
- Segment A3 Anode Segment B3 Anode
- Segment D3 Anode

- 25 Segment E3 Anode
- Segment C3 Anode
- Segment F4 Anode
- Segment G4 Anode 28 29 Segment A4 Anode
- Segment B4 Anode
- Segment E4 Anode 31
- Segment D4 Anode Segment C4 Anode
- 34 Com. Cath. Digits 3 & 4

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

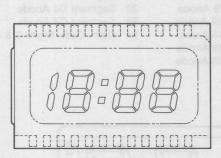
OPTOELECTRONICS

019

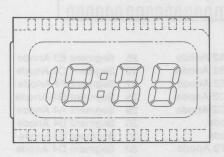


| | PIN | FLC3503-1 | | |
|----------------|-----|------------------------|----|------------------------|
| | 3 1 | Backplane | 13 | Segment B ₃ |
| | 2 | Half Digit | 14 | Segment A ₃ |
| | 3 | Segment E ₁ | 15 | Segment F ₃ |
| LI PALE | 4 | Segment D ₁ | 16 | Segment G ₃ |
| | 5 | Segment C ₁ | 17 | Segment B ₂ |
| 1 1 10 1 174 | 6 | Colons | 18 | Segment A ₂ |
| na on had back | 7 | Segment E ₂ | 19 | Segment F ₂ |
| | 8 | Segment D ₂ | 20 | Segment G ₂ |
| | 9 | Segment C ₂ | 21 | Segment B ₁ |
| | 10 | Segment E ₁ | 22 | Segment A ₁ |
| | 11 | Segment D ₁ | 23 | Segment F ₁ |
| | 12 | Segment C ₁ | 24 | Segment G ₁ |
| | | | | |

020



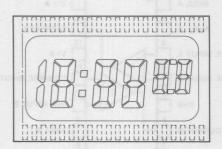
| PIN | FLC3505-1 | | |
|-----|------------------------|----|------------------------|
| 1 | Backplane | 13 | Segment Ba |
| 2 | Half Digit | 14 | Segment Ag |
| 3 | Segment E ₁ | 15 | Segment F ₃ |
| 4 | Segment D ₁ | 16 | Segment G |
| 5 | Segment C ₁ | 17 | Segment Ba |
| 6 | Colons | 18 | Segment Az |
| 7 | Segment C ₂ | 19 | Segment F2 |
| 8 | Segment D ₂ | 20 | Segment G |
| 9 | Segment C ₂ | 21 | Segment B ₁ |
| 10 | Segment E ₃ | 22 | Segment A ₁ |
| 11 | Segment D ₃ | 23 | Segment F ₁ |
| 12 | Segment C ₃ | 24 | Segment G |
| | | | |



| PIN | FLC3505-2 | | |
|-----|------------------------|----|------------------------|
| 1 | Backplane | 13 | Segment B ₃ |
| 2 | Half Digit | 14 | Segment A ₃ |
| 3 | Segment E ₁ | 15 | Segment F ₃ |
| 4 | Segment D ₁ | 16 | Segment G ₃ |
| 5 | Segment C ₁ | 17 | Segment B ₂ |
| 6 | Colon | 18 | Segment A ₂ |
| 7 | Segment E ₂ | 19 | Segment F ₂ |
| 8 | Segment D ₂ | 20 | Segment G ₂ |
| 9 | Segment C ₂ | 21 | Segment B ₁ |
| 10 | Segment E ₁ | 22 | Segment A ₁ |
| 11 | Segment D ₁ | 23 | Segment F ₁ |
| 12 | Segment C ₁ | 24 | Segment G ₁ |

OPTOELECTRONICS

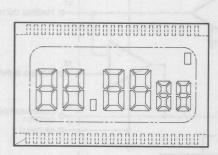
022



| NIC | FLC5505-1 | | | | |
|-----|------------------------|----|------------------------|----|------------------------|
| 1 | Backplane | 15 | Segment D ₄ | 29 | Segment B ₃ |
| 2 | Segment E ₁ | 16 | Segment C ₄ | 30 | Segment A ₃ |
| 3 | Segment D ₁ | 17 | Segment B ₅ | 31 | Segment F ₃ |
| 4 | Segment C ₁ | 18 | Segment E ₅ | 32 | Segment B ₂ |
| 5 | Segment G ₂ | 19 | Segment D ₅ | 33 | Segment A ₂ |
| 6 | Segment E ₂ | 20 | Segment C ₅ | 34 | Segment F ₂ |
| 7 | Segment D ₂ | 21 | Segment G ₅ | 35 | Colon |
| 8 | Segment C ₂ | 22 | Segment B ₅ | 36 | Segment B ₁ |
| 9 | Segment G ₃ | 23 | Segment A ₅ | 37 | Segment A ₁ |
| 10 | Segment E ₃ | 24 | Segment F ₅ | 38 | Segment F ₁ |
| 11 | Segment D ₃ | 25 | Segment G ₄ | 39 | Segment G ₁ |
| 12 | Segment C ₃ | 26 | Segment B ₄ | 40 | Half Digit |
| 13 | Segment G ₄ | 27 | Segment A4 | | |

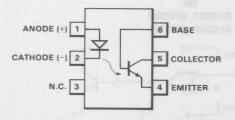
023

14 Segment E₄ 28 Segment F₄

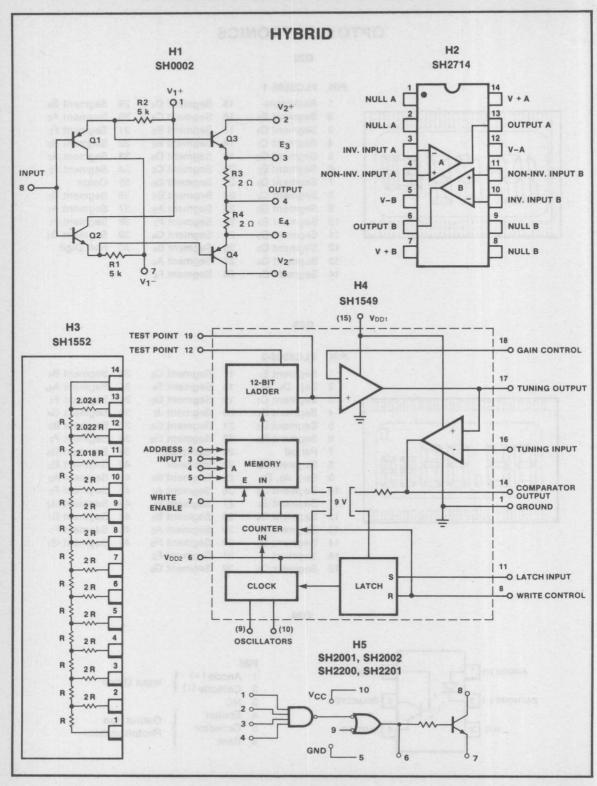


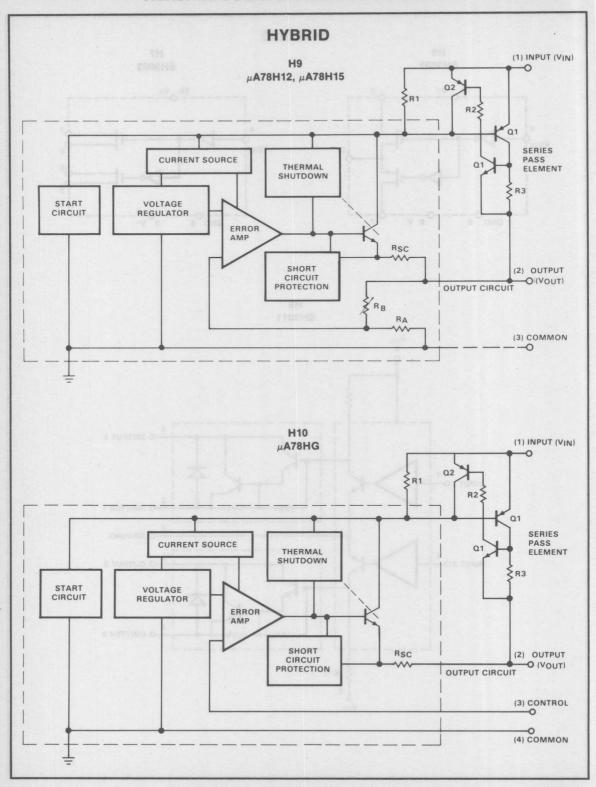
| PIN | FLC6005-2 | | | | |
|-----|--------------------------------------|----|------------------------|----|------------------------|
| 1 | Segment E ₁ | 17 | Segment C ₅ | 33 | Segment B ₄ |
| 2 | Seg. D ₁ , A ₁ | 18 | Segment E ₆ | 34 | Segment A ₄ |
| 3 | Segment C ₁ | 19 | Segment D ₆ | 35 | Segment F ₄ |
| 4 | Segment E ₁ | 20 | Segment J ₆ | 36 | Segment G ₄ |
| 5 | Segment D2 | 21 | Segment C ₆ | 37 | Segment B ₃ |
| 6 | Segment C ₂ | 22 | Segment G ₆ | 38 | Segment F ₃ |
| 7 | Period | 23 | Backplane | 39 | Segment G ₃ |
| 8 | Segment E ₃ | 24 | Indicator | 40 | Segment B ₂ |
| 9 | Seg. A ₃ , D ₃ | 25 | Segment B ₆ | 41 | Segment A ₂ |
| 10 | Segment C ₃ | 26 | Segment A ₆ | 42 | Segment F ₂ |
| 11 | Segment E4 | 27 | Segment F ₆ | 43 | Segment G ₂ |
| 12 | Segment D ₄ | 28 | Segment B ₅ | 44 | Segment B ₁ |
| 13 | Segment C ₄ | 29 | Segment A ₅ | 45 | Segment F ₁ |
| 14 | Segment E ₅ | 30 | Segment H ₅ | 46 | Segment G ₁ |
| 15 | Segment J ₅ | 31 | Segment F ₅ | | |
| 16 | Segment D ₅ | 32 | Segment G ₅ | | |

024

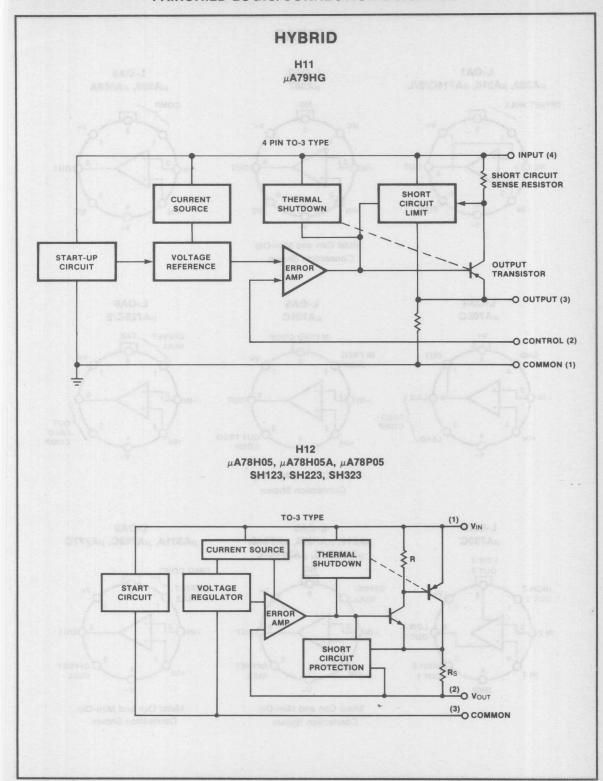


PIN 1 Anode (+) 2 Cathode (-) 3 NC 4 Emitter 5 Collector 6 Base Input Diode Output npn Phototransistor









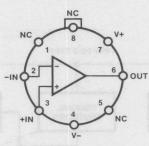
L-OA1 μA302, μA310, μΑ714C/E/L

OFFSET NULL

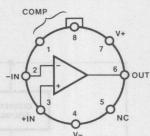
8
7
V

BIAS

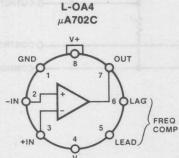
L-OA2 μA307



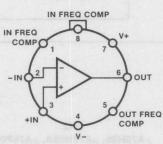
L-OA3 μA308, μA308A



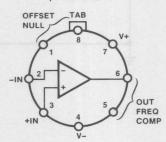
Metal Can and Mini-Dip Connection Shown



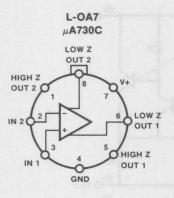
L-OA5 μΑ709C



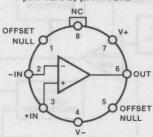
L-OA6 μΑ725C/E



Metal Can and Mini-Dip Connection Shown

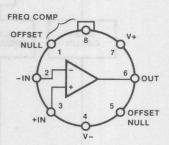


L-OA8 μA318, μAF355, μAF345, μA740A/E, μA741C/E

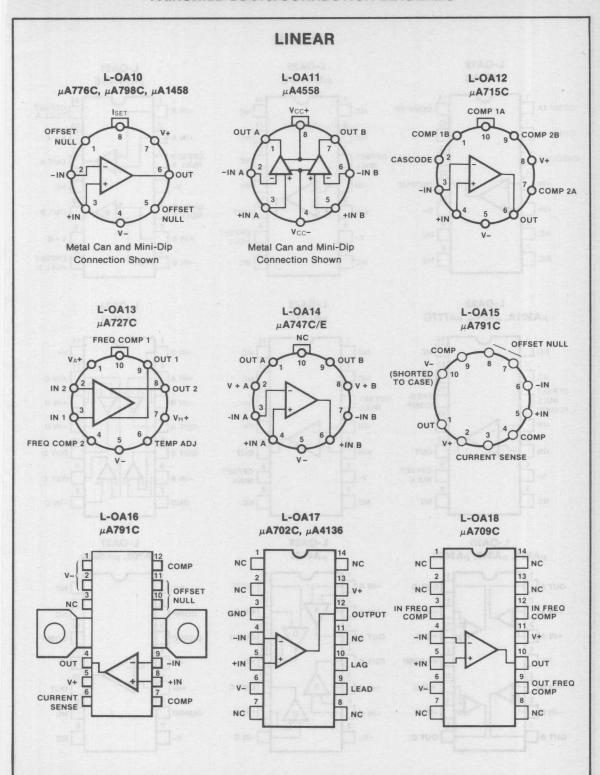


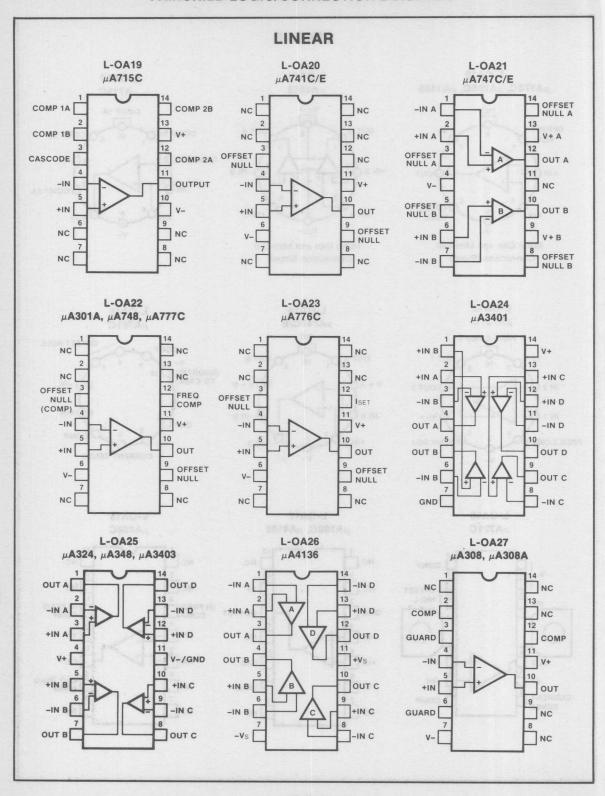
Metal Can and Mini-Dip Connection Shown

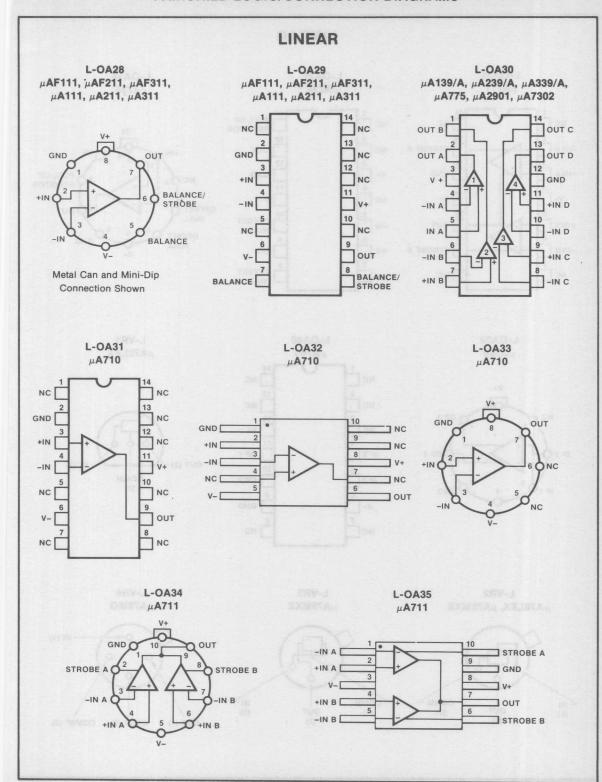
L-OA9 μΑ301Α, μΑ748C, μΑ777C



Metal Can and Mini-Dip Connection Shown

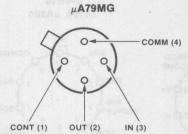




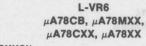


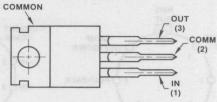
FAIRCHILD LOGIC/CONNECTION DIAGRAMS L-OA37 L-OA38 L-UA36 μ**A711** μ**A734** μA734 14 PULL-UP NC NC NC RESISTOR +IN 13 13 STROBE A -IN A NC 10 12 12 GND +IN A V+ GND PULL-UP NC O2 RESISTOR 11 11 NC V-OFFSET O OUT 10 10 NULL OFFSET +IN B OUT +IN NULL OFFSET GND NULL -INB STROBE B NC OFFSET NC NC -IN NULL L-OA39 L-OA40 L-VR1 μ**A760** μ**A760** μA78LXX NC NC V+ 13 NC NC NC OP 1 12 NC OP 1 OUT (2) 10 COMM OP 2 (3) GND NC NC L-VR2 L-VR3 L-VR4 μA78LXX, μA78MXX μ A79MXX μ**A78MG** IN (4) COMM --comm -IN IN OUT (3) OUT (1) (1) (3) (2) (2) OUT (1) CONT (2) COMM* (3)

LINEAR



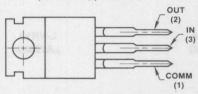
L-VR5



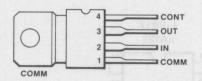


L-VR7 **μΑ79ΜΧΧ, μΑ79ΧΧ**

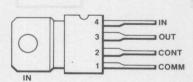
OUT (2)



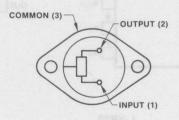
L-VR8 μ**A78G**, μ**A78MG**



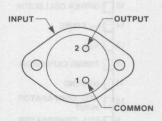
L-VR9 μ**Α79G**, μ**Α79MG**



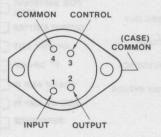
L-VR10 μA78CB. μΑ78ΧΧ, μΑ109, μΑ209, μΑ309



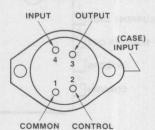
L-VR11 **μΑ79ΧΧ**

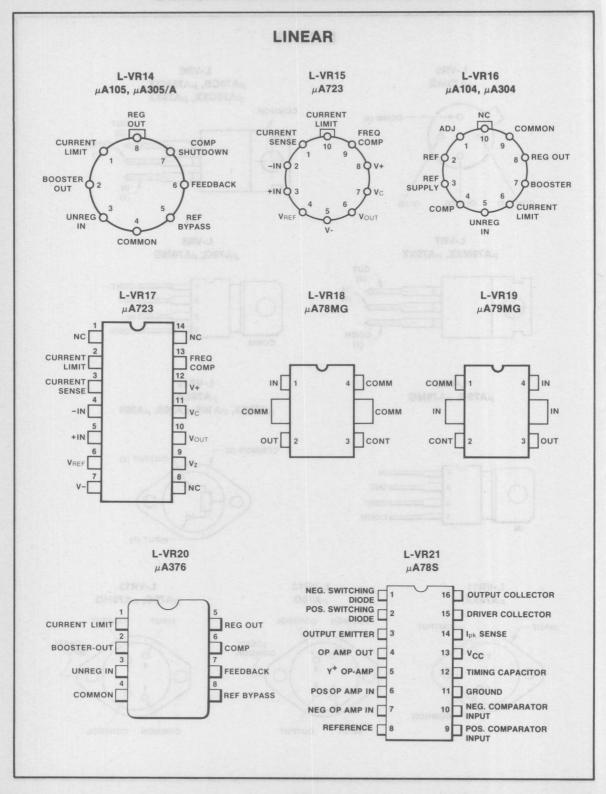


L-VR12 μ**A78G**



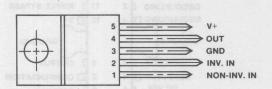
L-VR13 μ**A79G**, μ**A79HG**

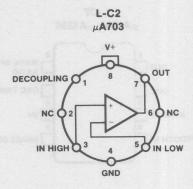


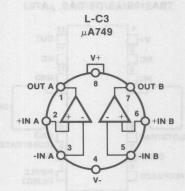


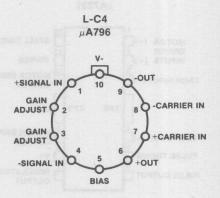
LINEAR

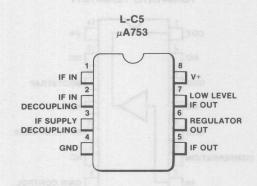
L-C1 TD2002, TDA2002A

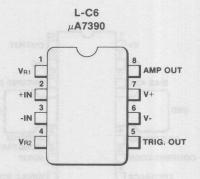












L-C7 μΑ1391, μΑ1394 MARK SPACE OUT RATIO OSC TIMING GND SYNC IN SAWTOOTH IN PHASE DET OUT L-C9 μ**A7391** STALL TIMER MOTOR (-DRIVER DRIVER INPUTS

TAB

TACH INPUT (-)

TACH INPUT (+)

PULSE TIMING

PULSE OUTPUT

FEEDBACK [

MOTOR DRIVE OUTPUT

MOTOR DRIVE

REGULATOR

RIPPLE BYPASS

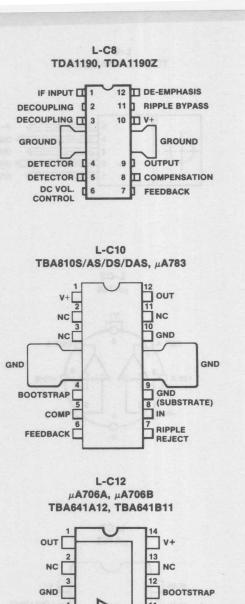
OUTPUT

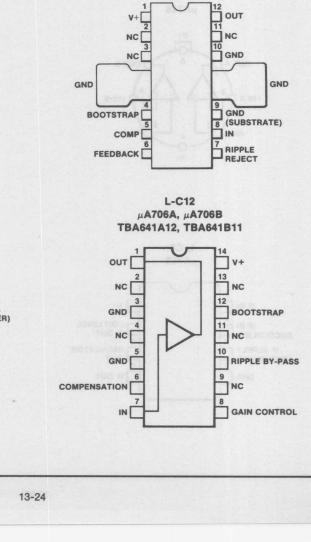
OUTPUT

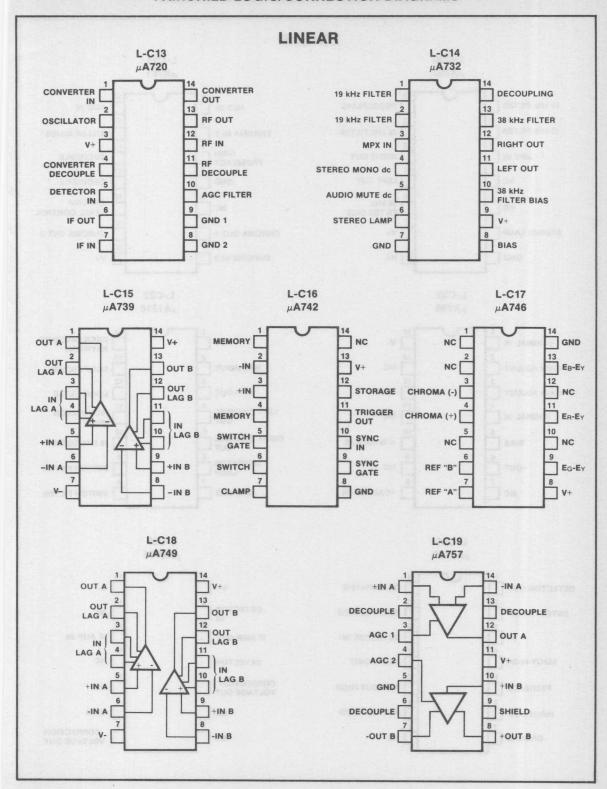
GND

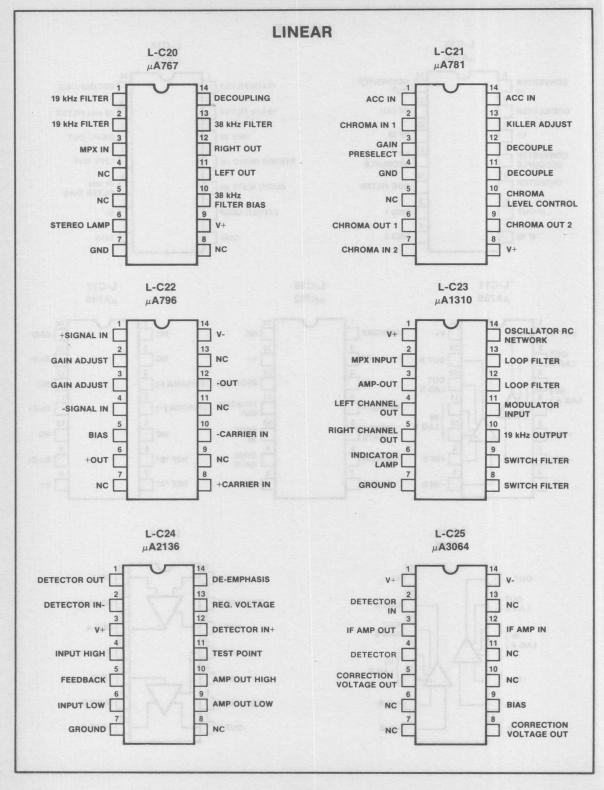
TBA800, TBA800A OUTPUT NC GROUND (POWER) BIAS ADJ. GND GND GROUND 8 (SUBSTRATE) BOOTSTRAP INPUT COMPENSATION

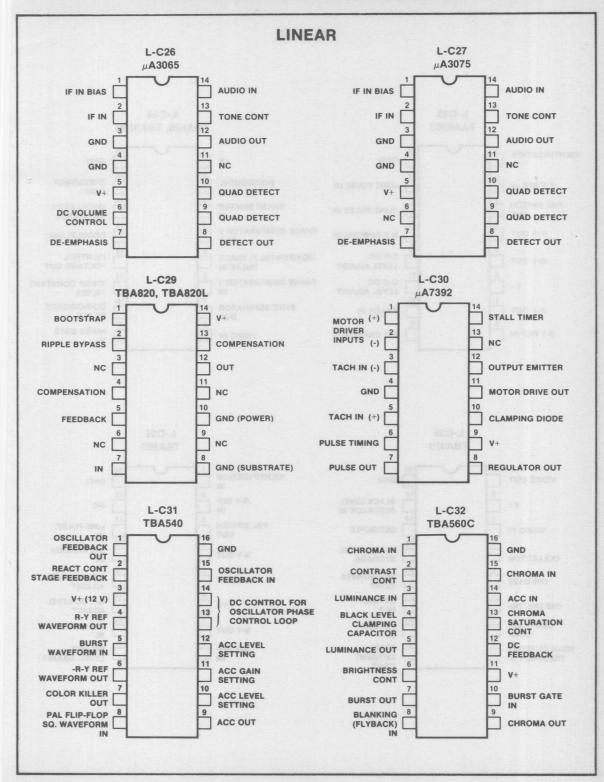
L-C11

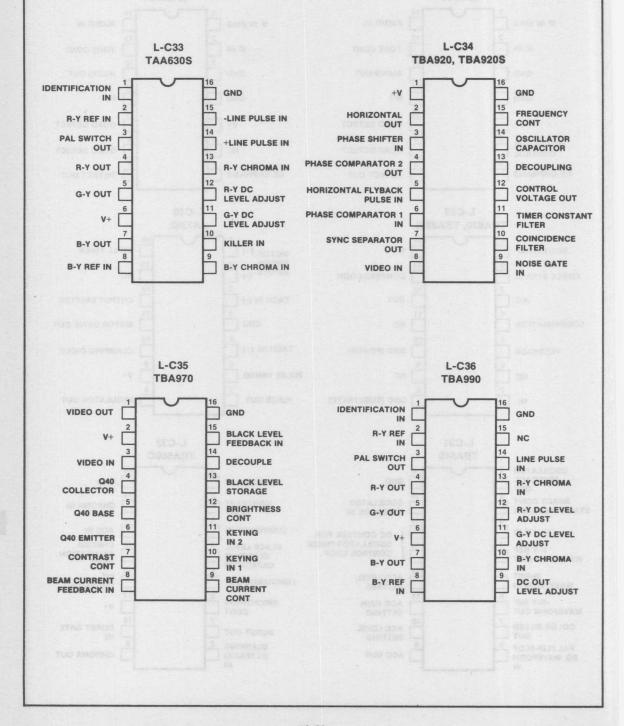


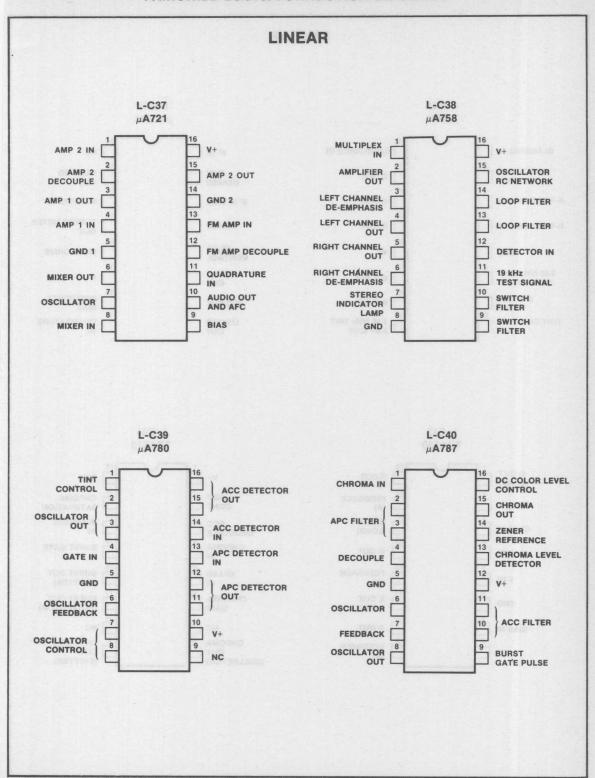


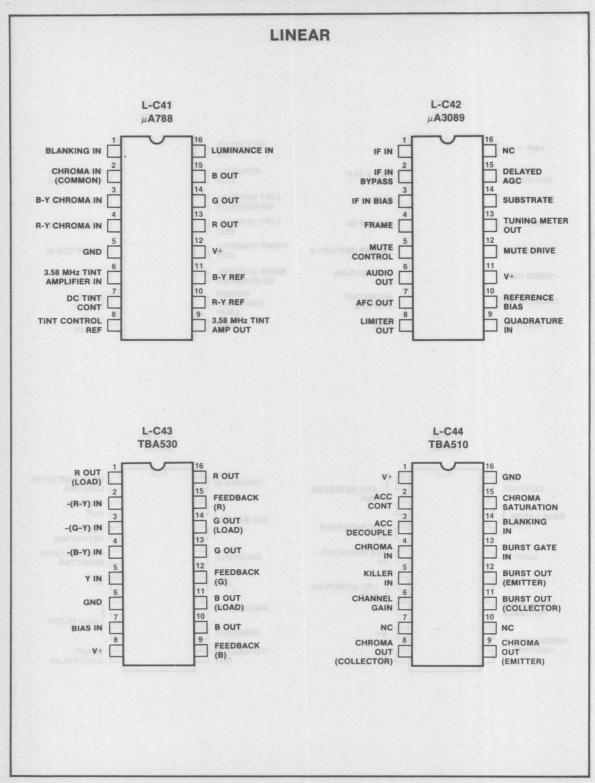


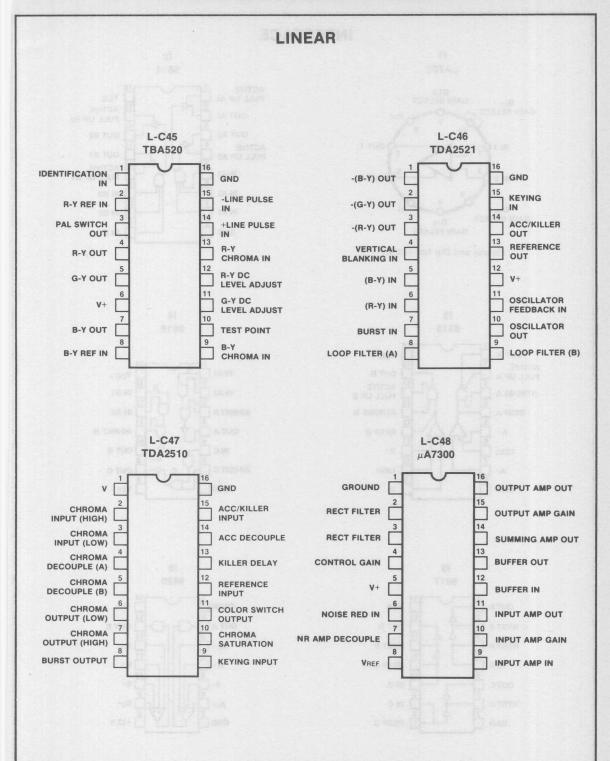


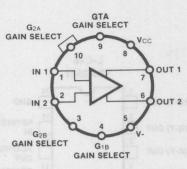




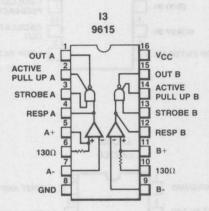


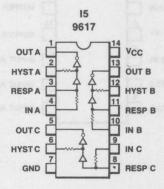


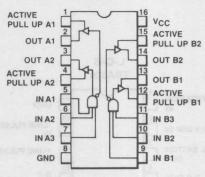


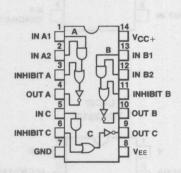


Flatpak and Dip Not Shown

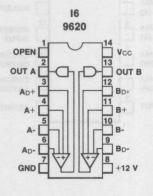


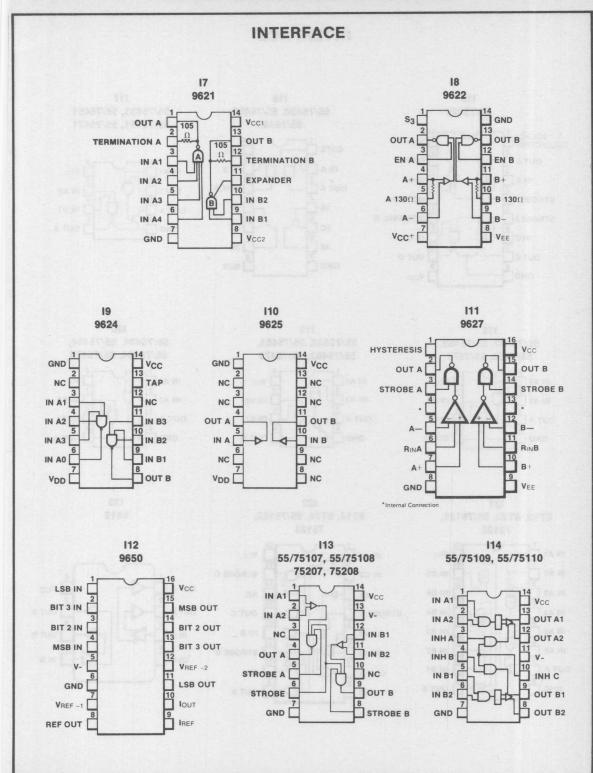






14





INTERFACE 117 115 116 55/75430, 55/75450, 55/75431, 55/75451 55/75325 55/75460 55/75461, 55/75471 SOURCE GATE **OUT A** OUT B IN B Vcc OUT A OUT B IN B2 STROBE 1 NODE R 11 2B 1B IN B1 INTERNAL R STROBE 2 1C 2C OUT B GND IN D INC 1E 2E OUT D OUTC GND SUB GND 118 119 120 55/75434, 55/75454, 55/75432, 55/75452, 55/75433, 55/75453, 55/75464, 55/75474 55/7562, 55/7572 55/75463, 55/75473 ☐ Vcc IN A1 Vcc ☐ Vcc IN B2 IN A2 IN B2 IN B2 IN B1 GND OUT B 123 122 121 9612 8T13, 8T23, 55/75121, 8T14, 8T24, 55/75122, 75123 75124 IN A1 Vcc IN C1 Vcc IN A2 IN B6 IN C2 STROBE C **OUT A** VCC IN A3 IN B5 RC RA IN A4 IN B4 STROBE A OUT C **OUT A** OUT B IN A5 IN B3 IN B IN A1 OUT B IN A6 IN B2 IN A2 STROBE B GND OUT A IN B1 OUT A RB GND OUT B GND OUT B

INTERFACE

IN A

OUT A

OUT A

VDD

OUT B

OUT B

IN B

OUT B

+IN B

-IN B

V_{CC}

14 OUT

OUT

TIMING

TRIGGER

EXT

CAP

IN A1

IN A2

-VREF

+VREF

RESET

GND

TB

RC

MOD

124

9613

127 μ**A2240**

BINARY COUNTER

13 12

Vcc

DISCHARGE

THRESHOLD

CONTROL

VOLTAGE

RESET

OUTPUT

TRIGGER

TIME

CONTROL FLIP FLOP

00

01

02 [

03 [

04

05

07

129 μ**A**556

DISCHARGE

THRESHOLD

CONTROL

VOLTAGE

RESET

OUTPUT

TRIGGER

GROUND

OUTPUT A

-IN A

GND

125

75491

IND

OUT D

OUT D

Vss

OUT C

OUT C

IN C

126

75492, 9664

OUT B

VDD

INC

OUT C

OUT D

IN A

OUT F

IN F

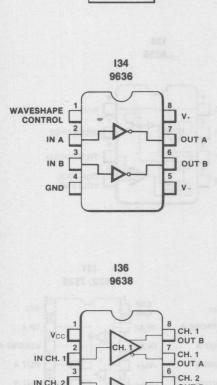
Vcc

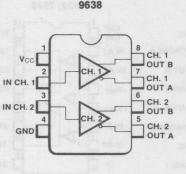
IN E

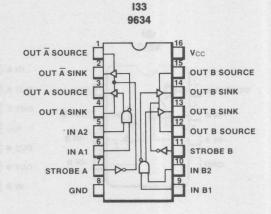
OUTE

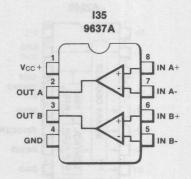
IN D

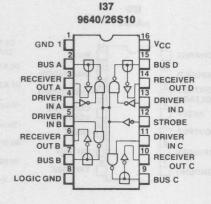
132 7534, 7535, 75234, 75235 EXP V_{CC} CAP STROBE A IN A1 OUT A IN A2 -VREF GND 2 +VREF OUT B IN B1 STROBE B 10 IN B2 NC GND 1 134 9636

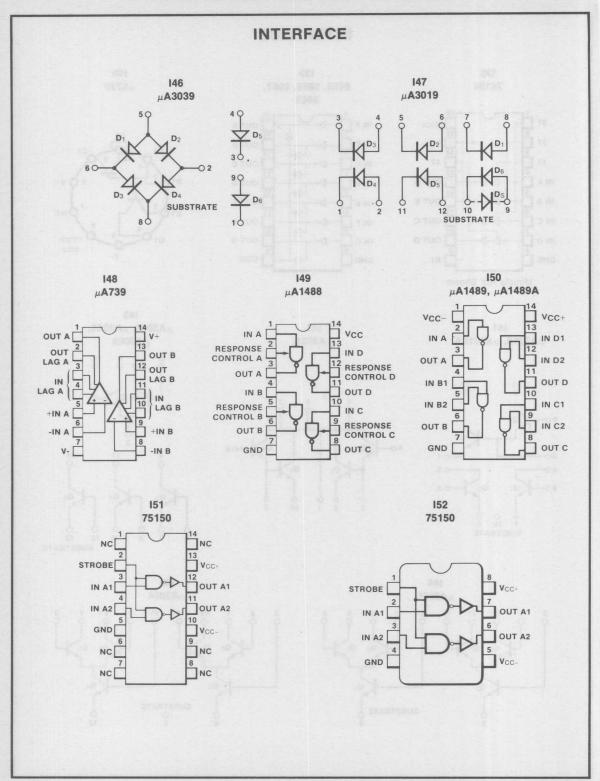




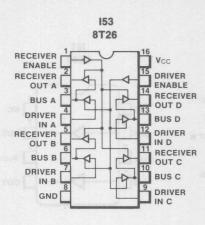


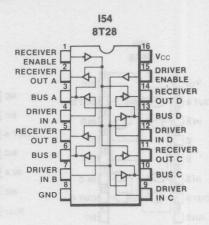


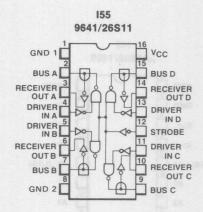


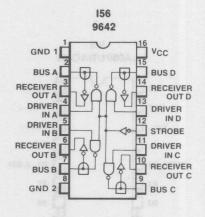


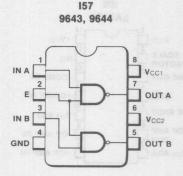
INTERFACE

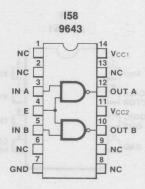


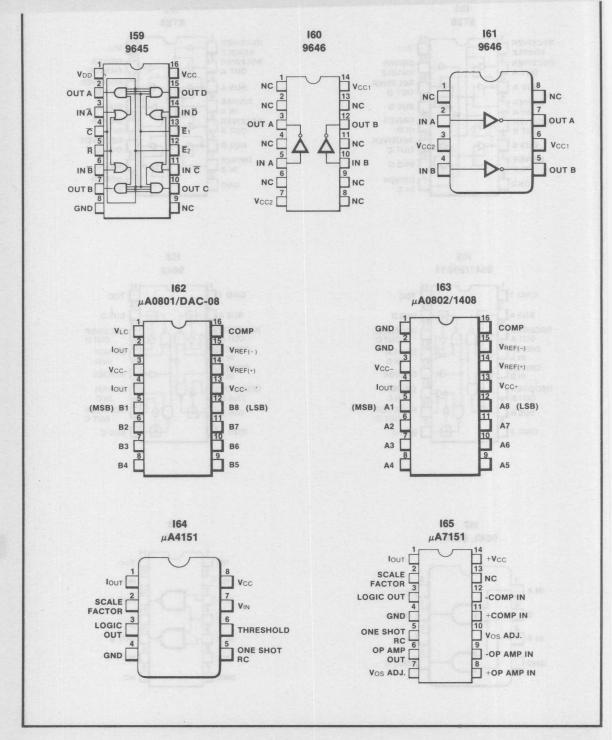




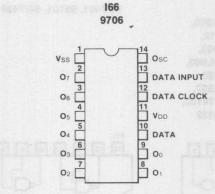


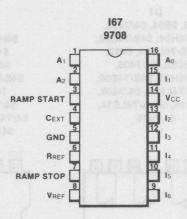


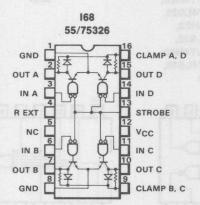


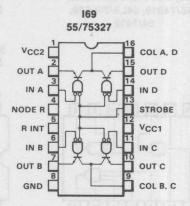


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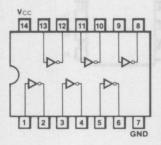




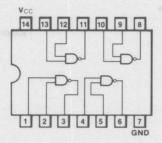


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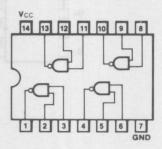
D1 9016, 9804, 54/7404, 54H/74H04, 54S/74S04, 54LS/74LS04, 9017, 9805A, 54/7405, 54H/74H05, 54S/74S05, 54LS/74LS05, 54/7406, 54/7414, 54LS/74LS14, 54/7416



D2 9002, 54/7400, 54H/74H00, 54S/74S00, 54LS/74LS00, 9012, 54H/74H01, 54/7403, 54S/74S03, 54LS/74LS03, 7426, 54LS/74LS26 54/7437, 54LS/74LS37, 54/7438, 74LS38, 54/74132, 54S/74S132, 74LS132



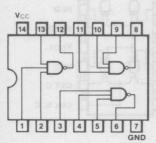
D3 54/7401, 96101, 54/7439



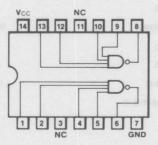
D6

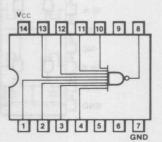
9007

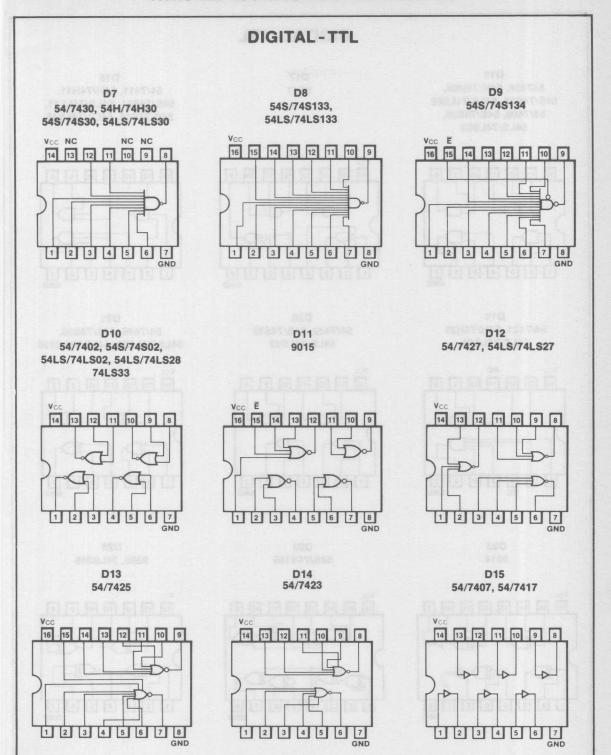
D4 9003, 54/7410, 54H/74H10, 54S/74S10, 54LS/74LS10, 54/7412



D5 9004, 54/7420, 54H/74H20, 54S/74S20, 54LS/74LS20, 54/7422, 54H/74H22, 74S22, 54LS/74LS22, 9009, 54/7440, 54H/74H40, 54S/74S40, 54LS/74LS40, 54S/74S140



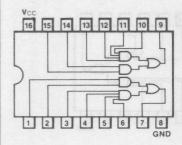




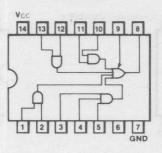
D18 D16 D17 54/7411, 54H/74H11, 547408, 54H/74H08, 9541 54S/74S11, 54LS/74LS11, 54S/74S08, 54LS/74LS08 54S/74S15, 54LS/74LS15 54/7409, 54\$/74\$09, 54LS/74LS09 16 15 14 13 12 11 10 9 14 13 12 11 10 9 14 13 12 11 10 9 8 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 7 8 D19 D20 D21 54/7421, 54H/74H21 54/7432, 54S/74S32 54/7486, 54\$/74\$86, 54LS/74LS21 54LS/74LS32 54LS/74LS86, 54LS/74LS136 NC 14 13 12 11 10 9 8 14 13 12 11 10 9 8 14 13 12 11 10 9 8 D22 D23 D24 9014 54\$/74\$135 9386, 74LS266 V_{CC}
16 15 14 13 12 11 10 16 15 14 13 12 11 10 9 14 13 12 11 10 9 8

DIGITAL-TTL

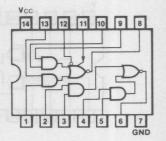
D25 9542



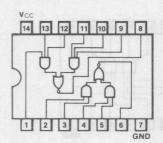
D26 54H/74H52



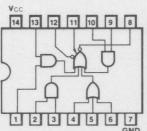
D27 9005, 54/7450, 54H/74H50



D28 54/7451*, 54H/74H51*, 54S/74S51*, 54LS/74LS51

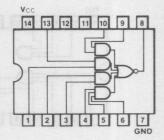


D29 9008, 54/7453, 54H/74H53

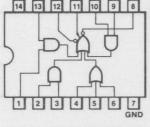


54/7454, 54H/74H54

D30

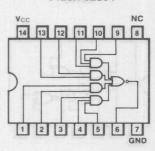


*Make no external connection to pins 11 & 12

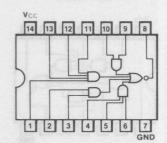


9008, 54/7453, 54H/74H53

D31 54LS/75LS54

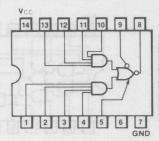


D32 74864, 74865

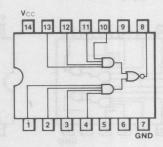


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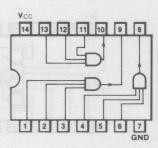
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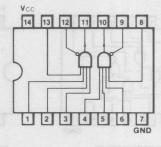
D34 54LS/74LS55



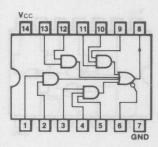
D35 54H/74H61



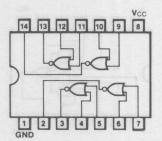
D36 9006, 54/7460, 54H/74H60



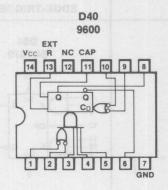
D37 54H/74H62

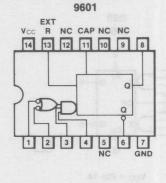


D39 96106



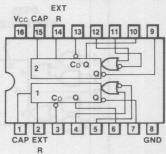
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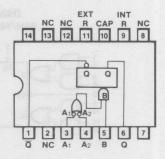


D41

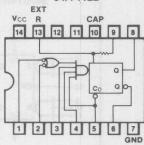




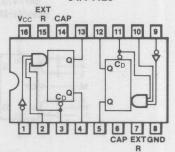
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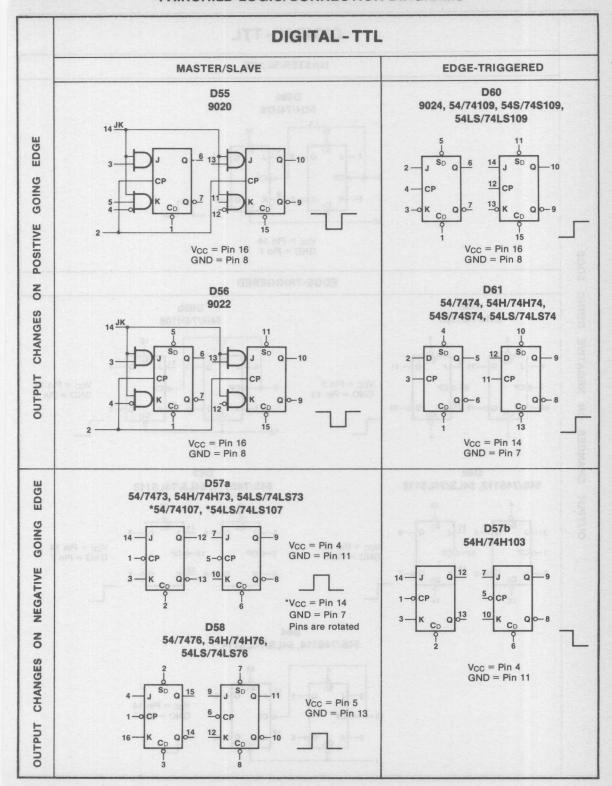


D44 54/74122

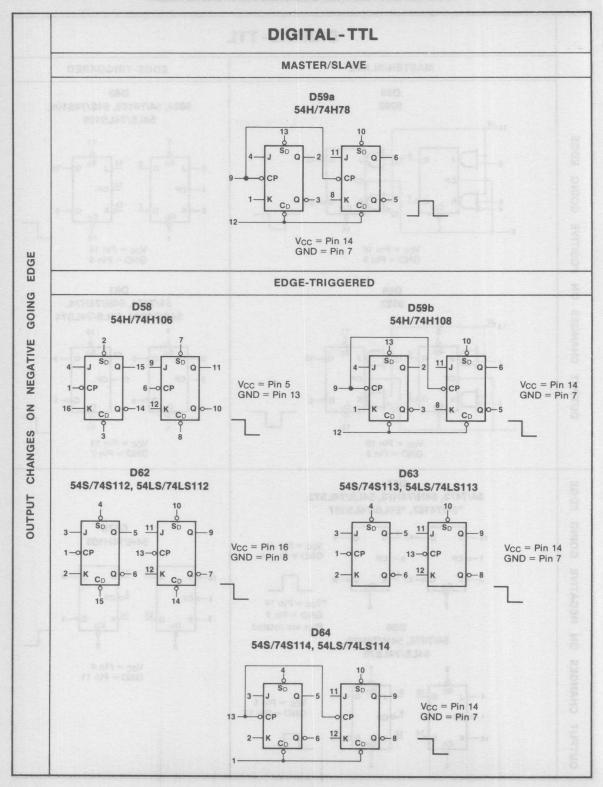






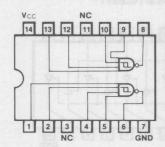


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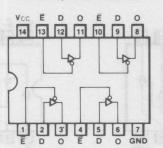


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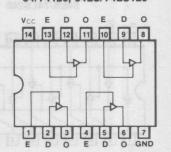
D65 54/7413, 54LS/74LS13



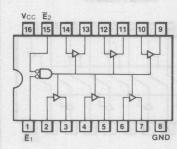
D66 54/74125, 54LS/74LS125



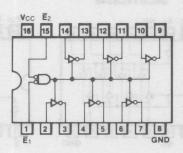
D67 54/74126, 54LS/74LS126



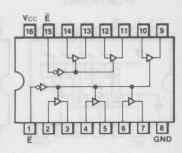
D68 54LS/74LS365



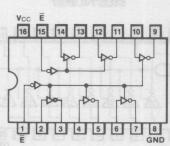
D69 54LS/74LS366



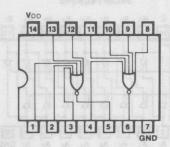
D70 54LS/74LS367



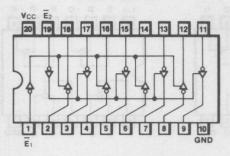
D71 54LS/74LS368



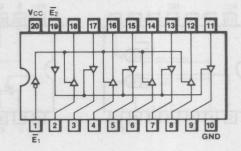
D72 54LS/74LS260



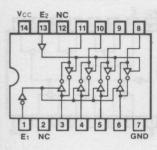
D73 54LS/74LS240



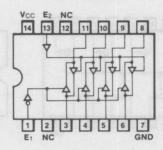
D74 54LS/74LS241



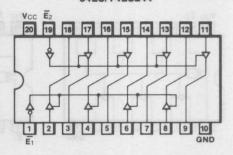
D75 54LS/74LS242



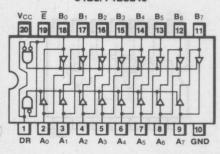
D76 54LS/74LS243



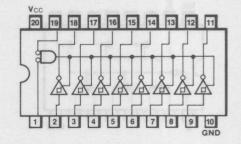
D77 54LS/74LS244

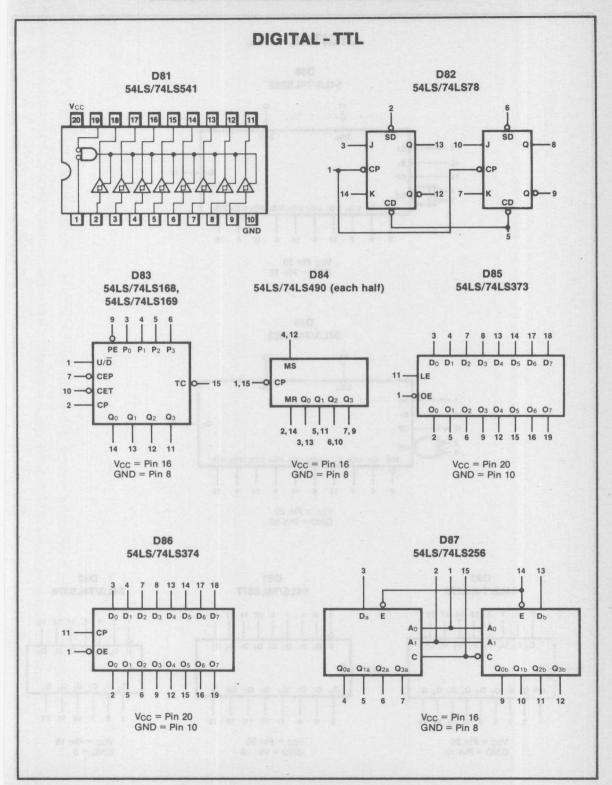


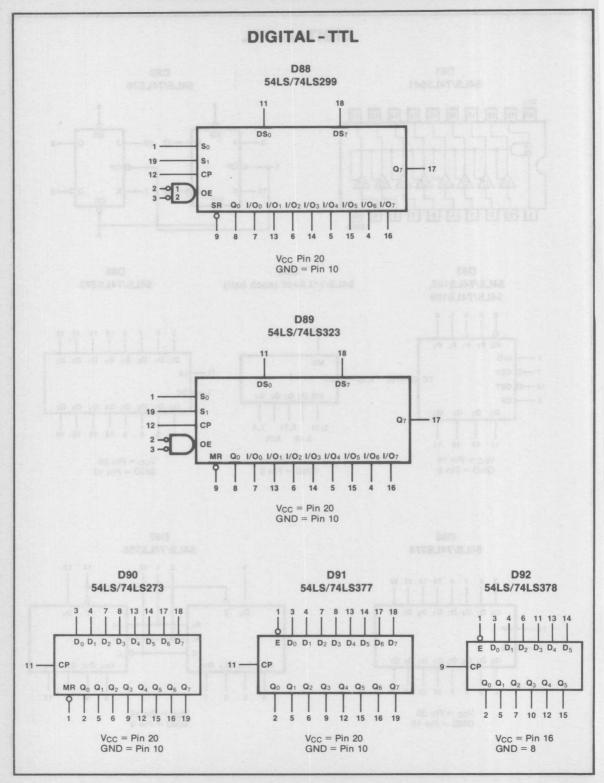
D79 54LS/74LS245

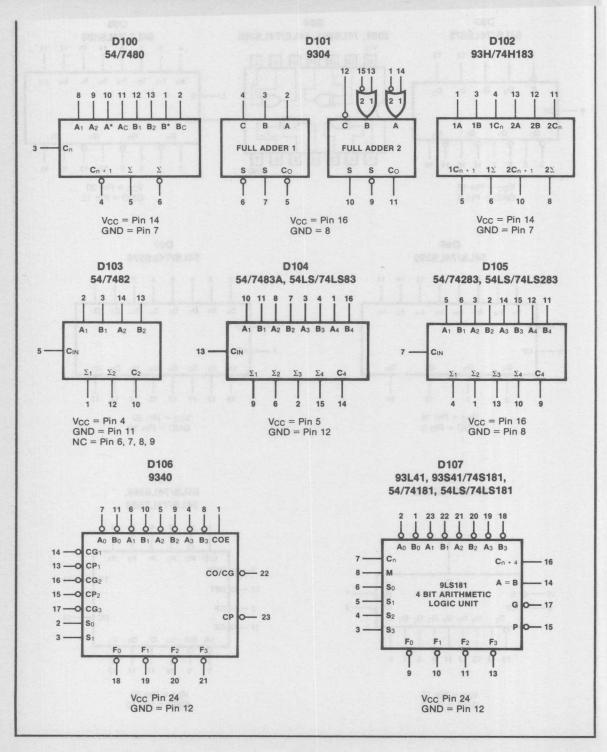


D80 54LS/74LS540

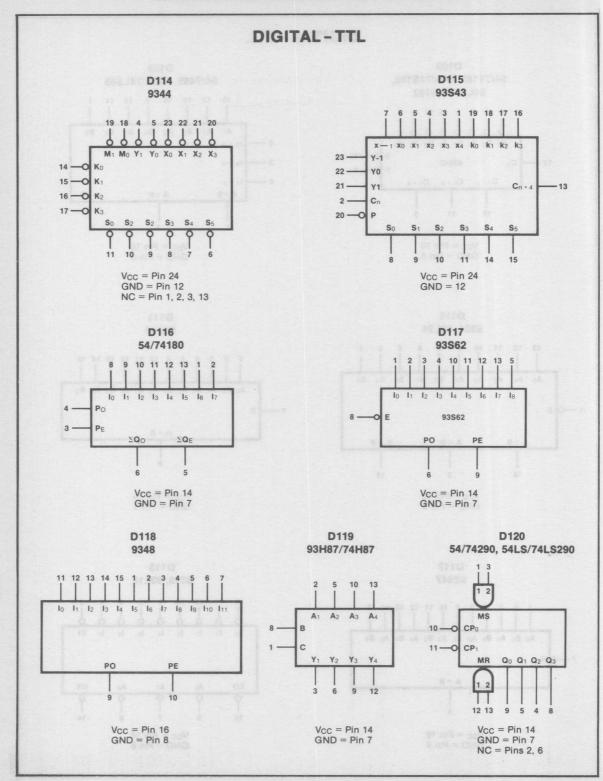






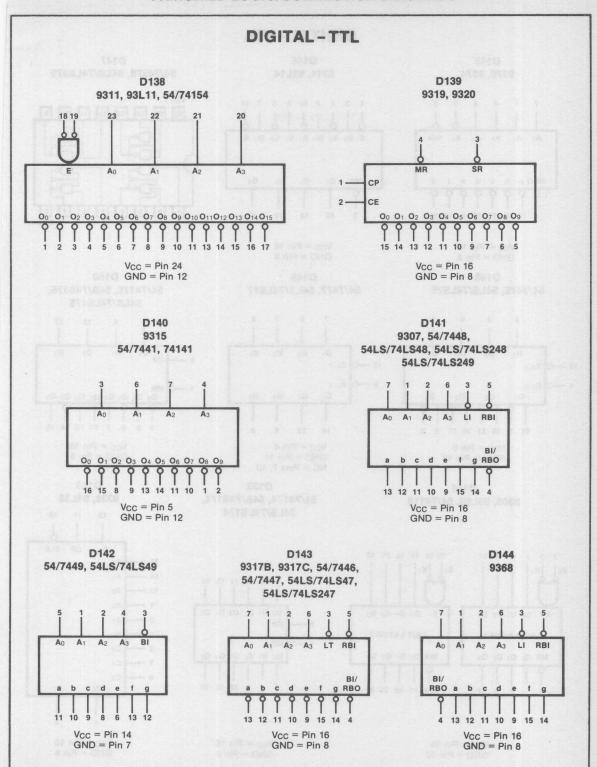


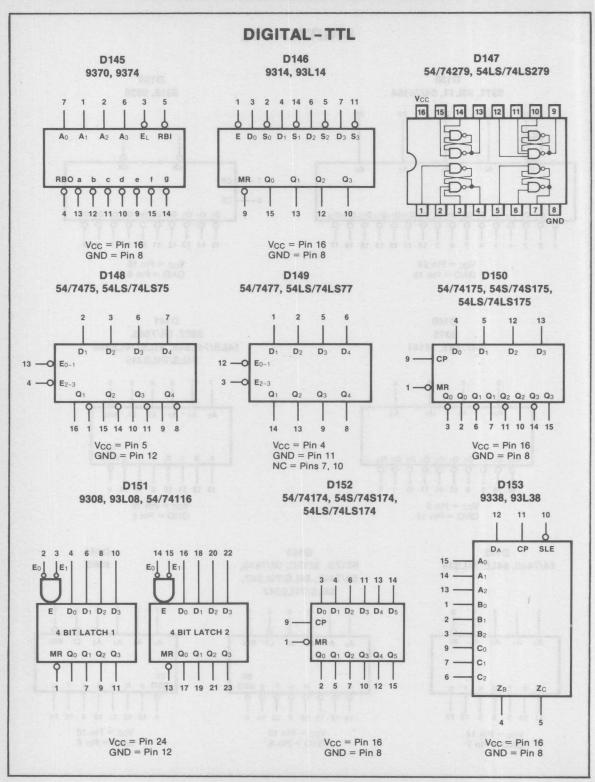
DIGITAL-TTL D109 D108 54/74182, 54S/74S182, 54/7485, 54LS/74LS85 54LS/74LS182 10 12 13 15 9 11 14 A1 A2 A3 B0 B1 B2 B3 IA < B Po Go P1 G1 P2 G2 P3 G3 G O IA = B 13 -Cn 93\$42 IA >B Cn + x Cn + y Cn + z A >B A < B A = B 12 11 Vcc = Pin 16 Vcc = Pin 16 GND = Pin 8 GND = Pin 8 D110 D111 9324, 93L24 93546 13 12 11 10 9 3 A3 A4 B0 B1 **B**₂ A0 A1 A2 B₃ B₄ A0 B0 A1 B1 A2 B2 A3 B3 A4 B4 A5 B5 1-0 E A = B A = B A > B A < B 15 14 Vcc = Pin 16 Vcc = Pin 16 GND = Pin 8 GND = Pin 8 D112 D113 93S47 9318, 93L18 6 10 11 12 13 14 15 17 14 15 16 A0 B0 A1 B1 A2 B2 A3 B3 A4 B4 A5 B5 A = B GS 15 14 V_{CC} = Pin 16 GND = Pin 8 Vcc = Pin 16 GND = Pin 8

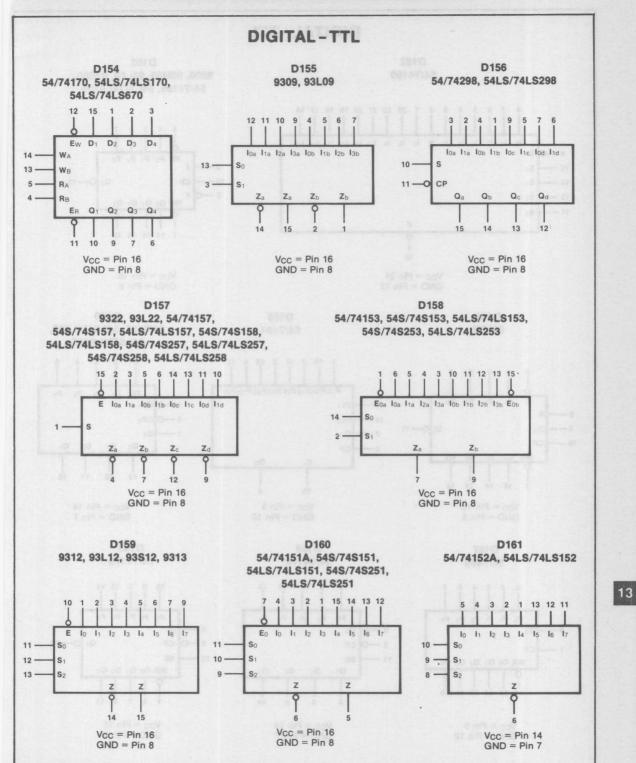


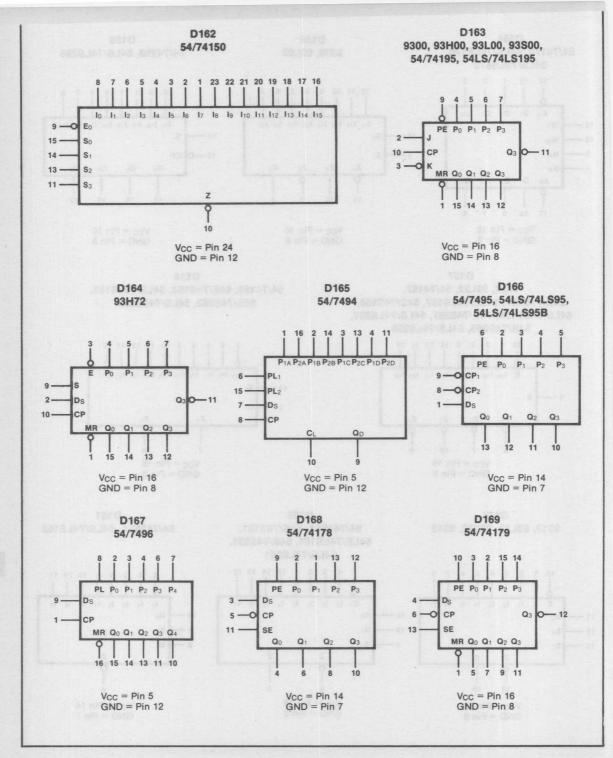
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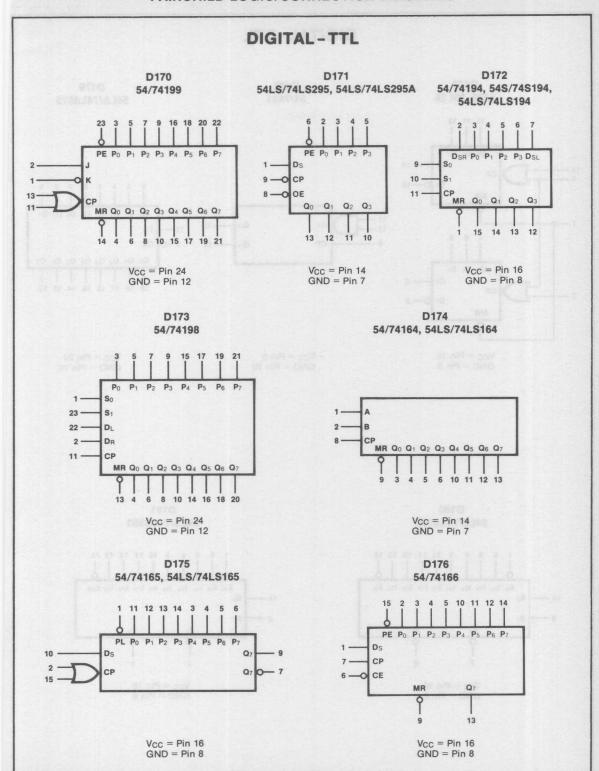
FAIRCHILD LOGIC/CONNECTION DIAGRAMS 9321, 93L21, 54/74155, 54LS/74LS155 04/14 19U, /4LS19U 54/74156, 54LS/74LS156 54/74191, 74LS191 54/74S139, 54LS/74LS139 11 15 1 10 9 15 14 13 PL P0 P1 P2 P3 A0 A1 Ao Ai RC - 13 DECODER a DECODER b DECODER a DECODER b O CE TC - 12 CP 14 0 1 2 3 0 1 2 3 00 01 02 03 00 01 02 03 Q0 Q1 Q2 Q3 12 11 10 9 7 6 5 4 10 11 12 Vcc = Pin 16 Vcc = Pin 16 Vcc = Pin 16 GND = Pin 8 GND = Pin 8 GND = Pin 8 D134 D133 9301, 93L01, 9302 9334, 93L34, 54LS/74LS259 13 D A₂ A1 Oo O1 O2 O3 O4 O5 O6 O7 O8 O9 C Oo O1 O2 O3 O4 O5 O6 O7 13 12 11 10 9 3 4 5 6 7 5 6 7 9 10 11 12 Vcc Pin 16 Vcc = Pin 16 GND = Pin 8 GND = Pin 8 D135 D136 D137 93\$137 54/7442, 54LS/74LS42, 54S/74S138, 54LS/74LS138 54/7443, 54/7444, 54/7445 54/74145, 54LS/74LS145 E1 | E3 13 12 14 E₂ **A**3 A0 A1 A2 EL A0 A1 A2 E1 E2 A2 93\$138 93\$137 O0 O1 O2 O3 O4 O5 O6 O7 00 01 02 03 04 05 06 07 Oo O1 O2 O3 O4 O5 O6 O7 O8 O9 15 14 13 12 11 10 9 15 14 13 12 11 10 9 5 6 9 10 11 Vcc = Pin 16 Vcc = Pin 16 Vcc = Pin 16 GND = Pin 8 GND = Pin 8 GND = Pin 8

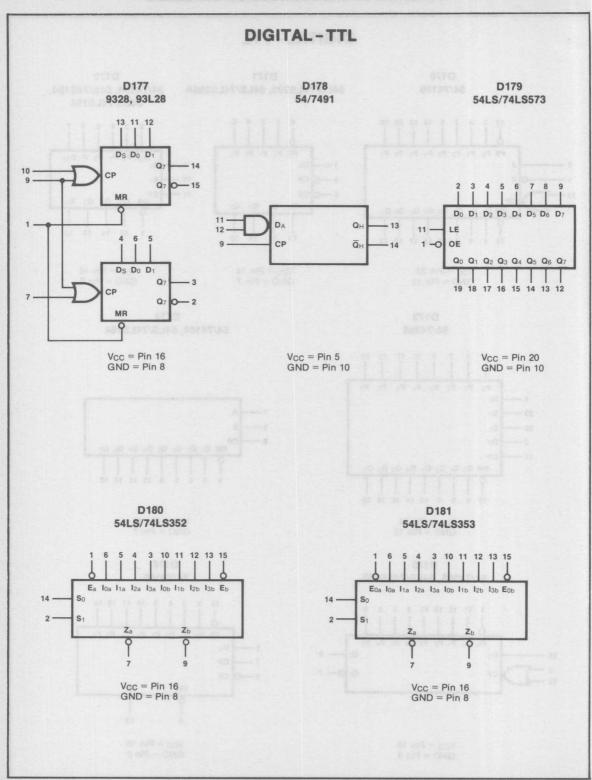


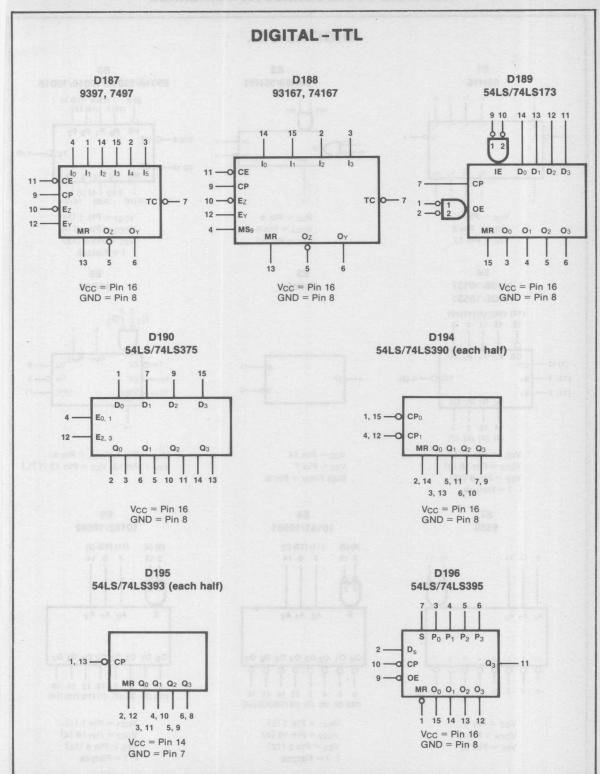


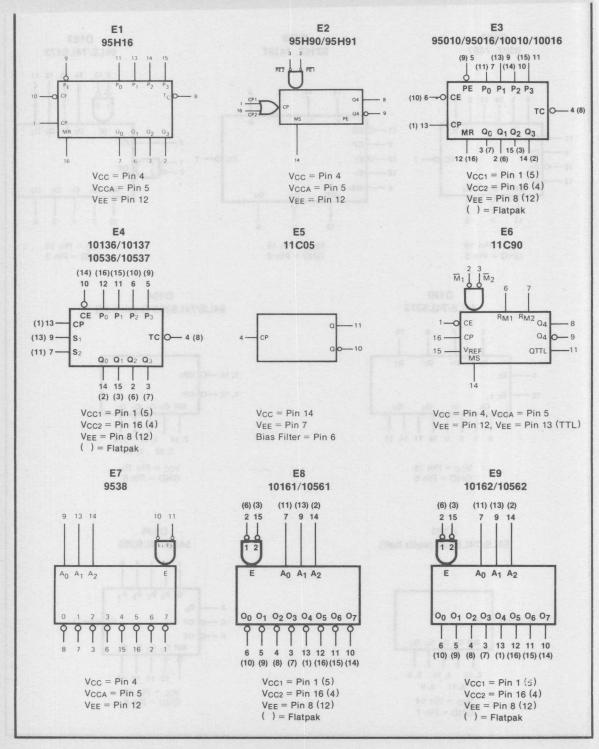


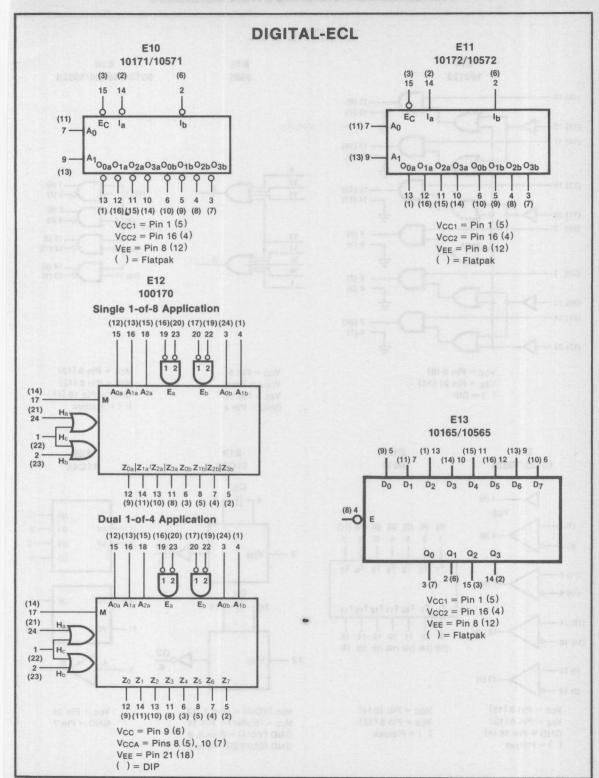


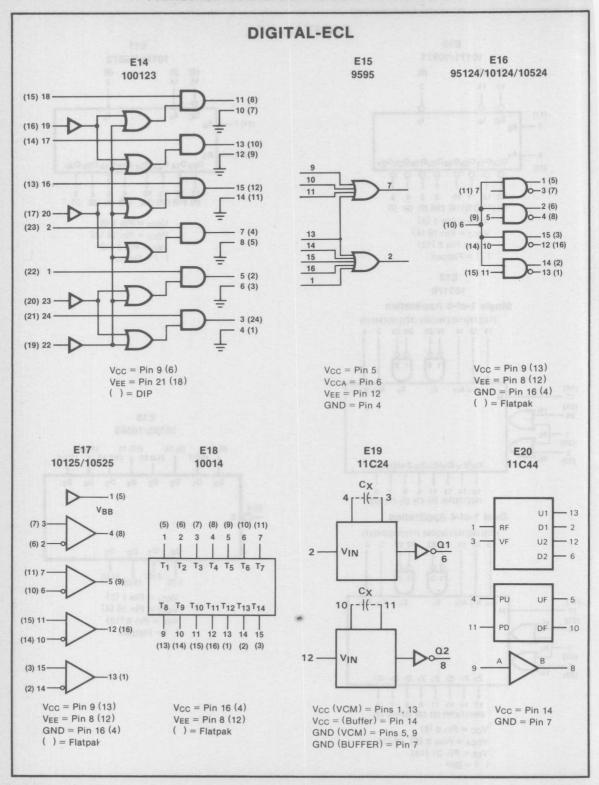




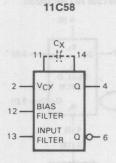




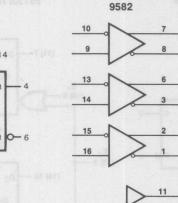


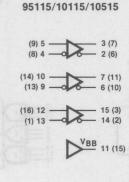


DIGITAL-ECL

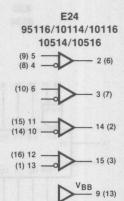


E21





E23



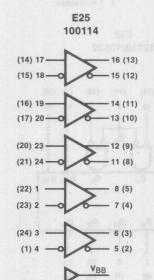
V_{CC1} = Pin 1 V_{CC2} = Pin 5 V_{EE} = Pin 8

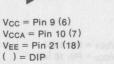
V_{CC1} = Pin 4 V_{CC2} = Pin 5 V_{EE} = Pin 12

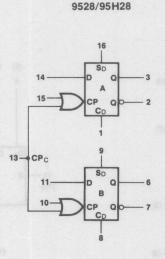
E22

V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak

V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak

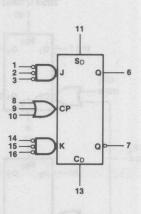






E26

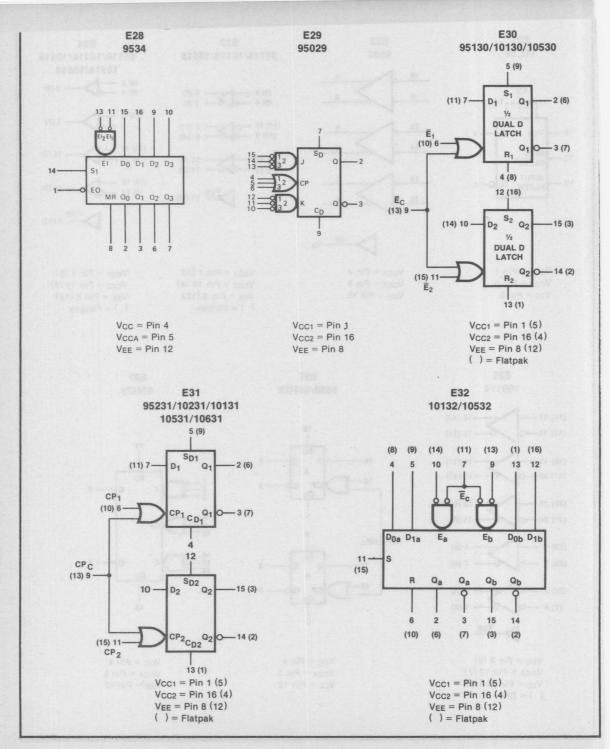




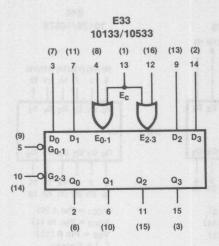
E27

95H29

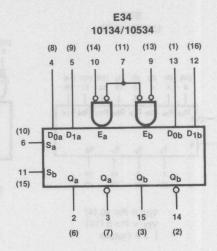
V_{CC} = Pin 4 V_{CCA} = Pin 5 V_{EE} = Pin 12



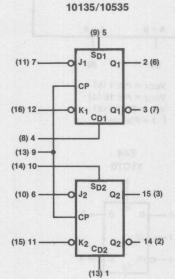
DIGITAL-ECL



V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak



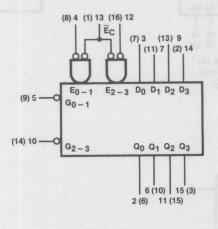
V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak



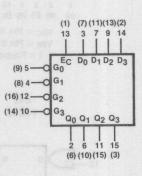
E35

V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak

E36 10153/10553



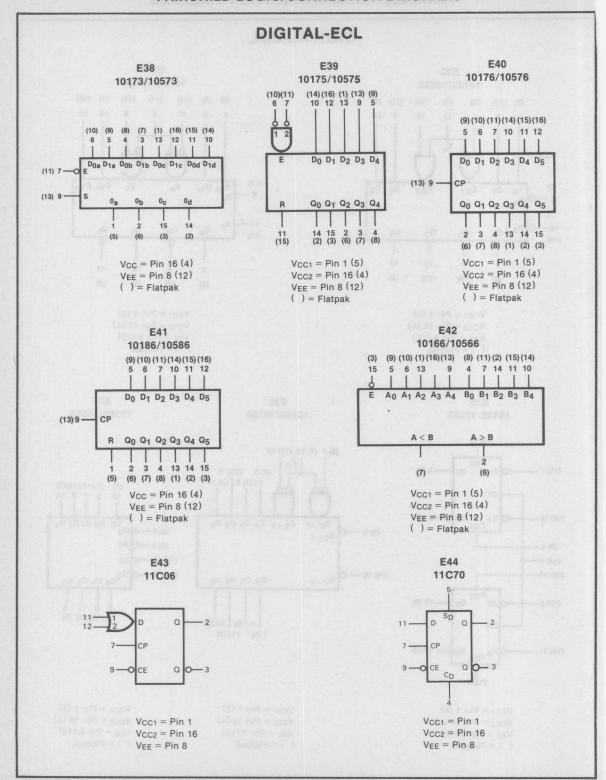
V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak



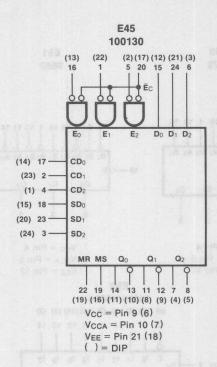
E37

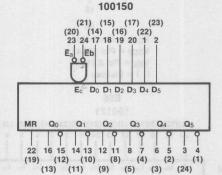
10168/10568

V_{CC1} = Pin 1 (5) V_{CC2} = Pin 16 (4) V_{EE} = Pin 8 (12) () = Flatpak



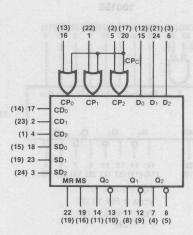
DIGITAL-ECL





E47

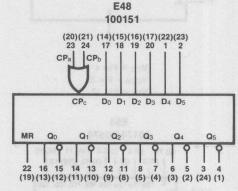
V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP



E46

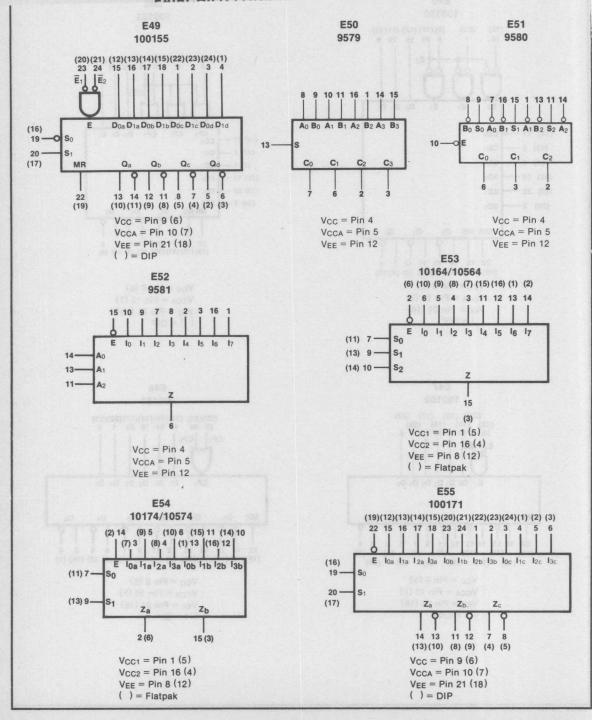
100131

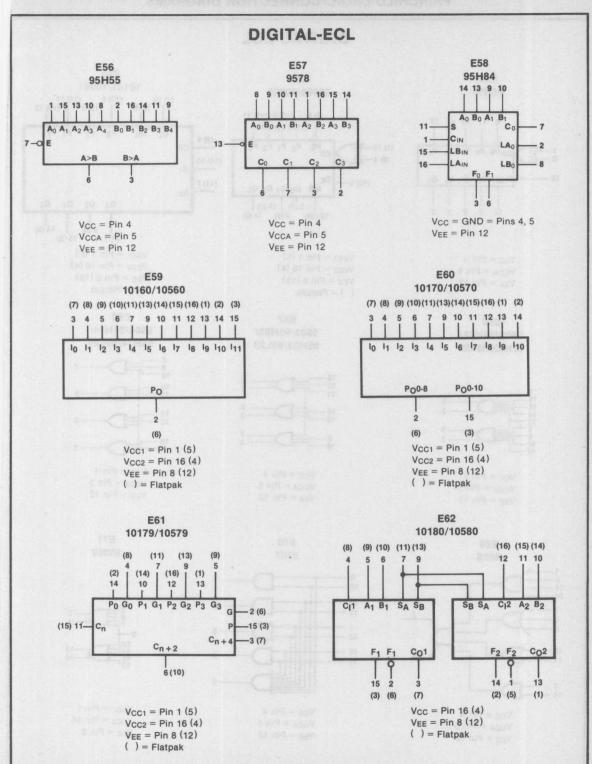
V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP

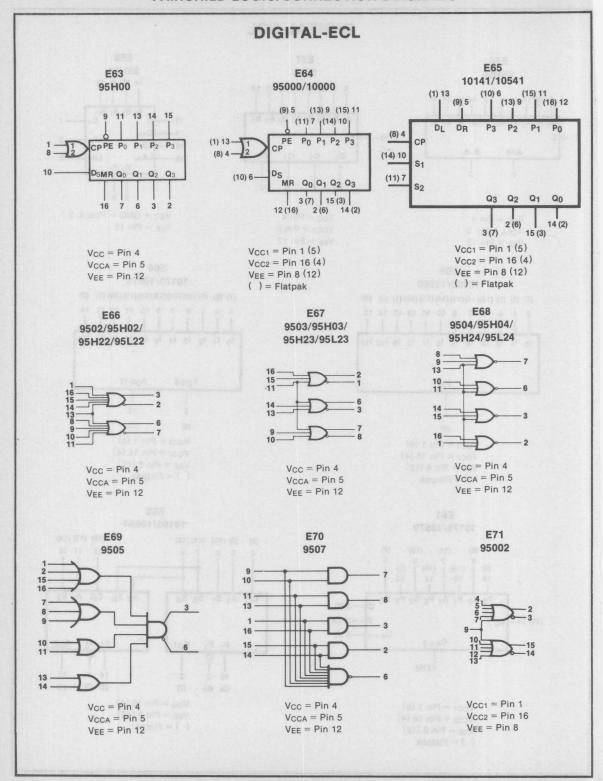


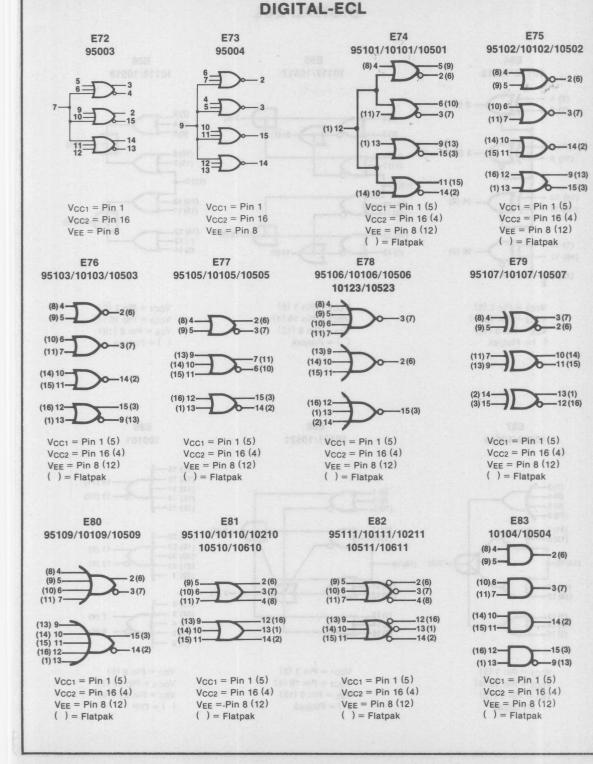
V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP

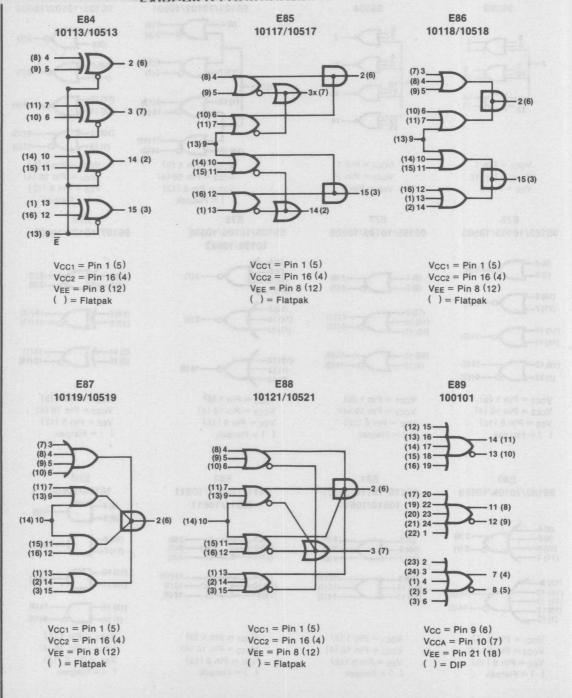
FAIRCHII D I OGIC/CONNECTION DIACRAMO



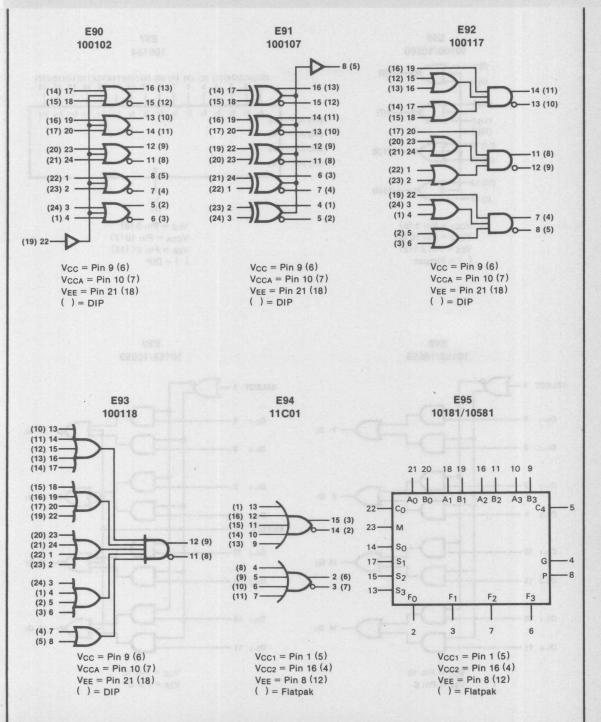


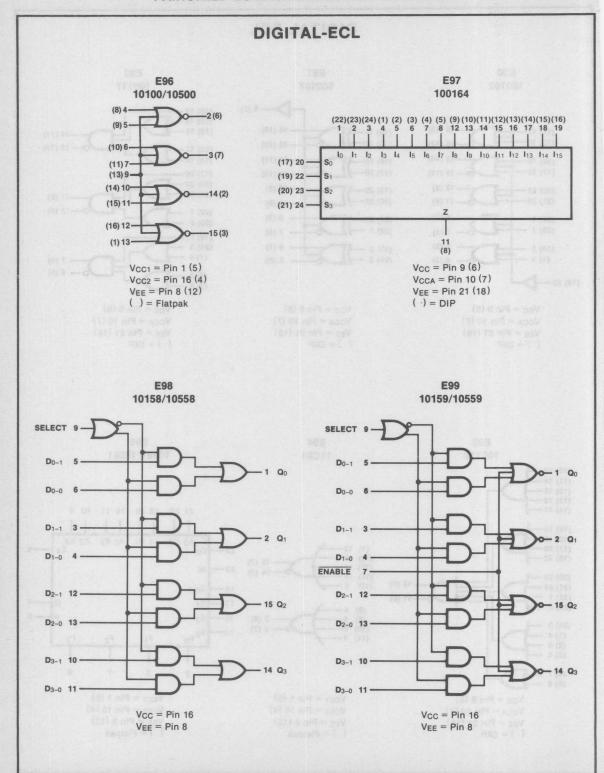






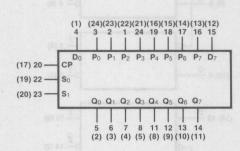






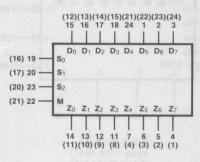
DIGITAL-ECL

E100 100141

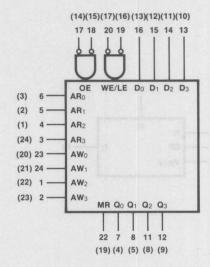


V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP

E102 100158

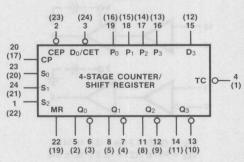


V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP E101 100145A



V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP

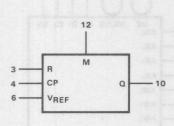
> E103 100136



V_{CC} = Pin 9 (6) V_{CCA} = Pins 8 (5), 10 (7) V_{EE} = Pin 21 (18) () = DIP

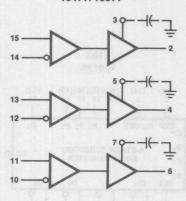
DIGITAL-ECL

E104 11C83

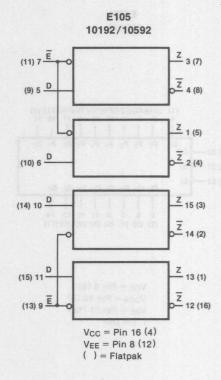


V_{CC} = Pin 1 V_{CCA} = Pin 14 GND = Pin 7

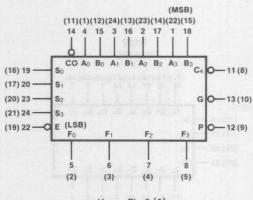
E106 10177/10577



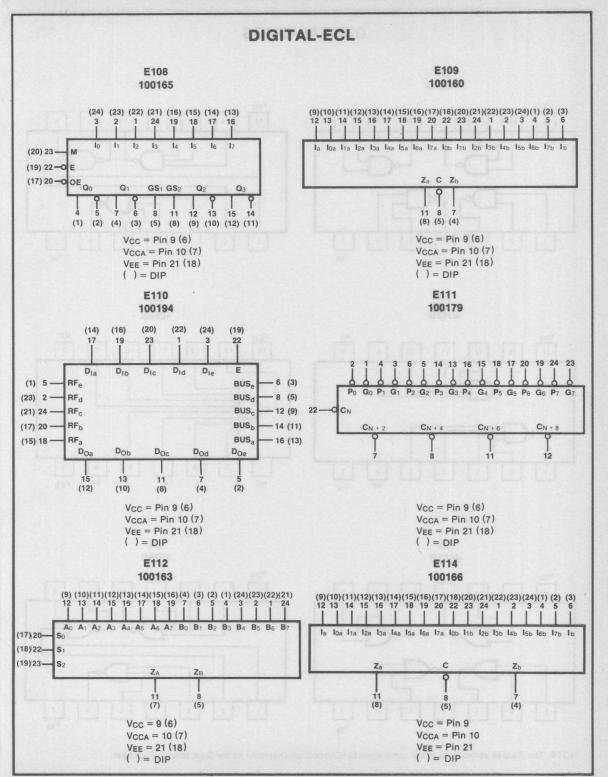
V_{CC} = GND = Pins 1 (5), 16 (4) V_{EE} = Pin 8 (12) = -5.2 V dc ± 5% V_{SS} = Pin 9 (13) = +5.0 V dc or +6.0 V dc ± 10%

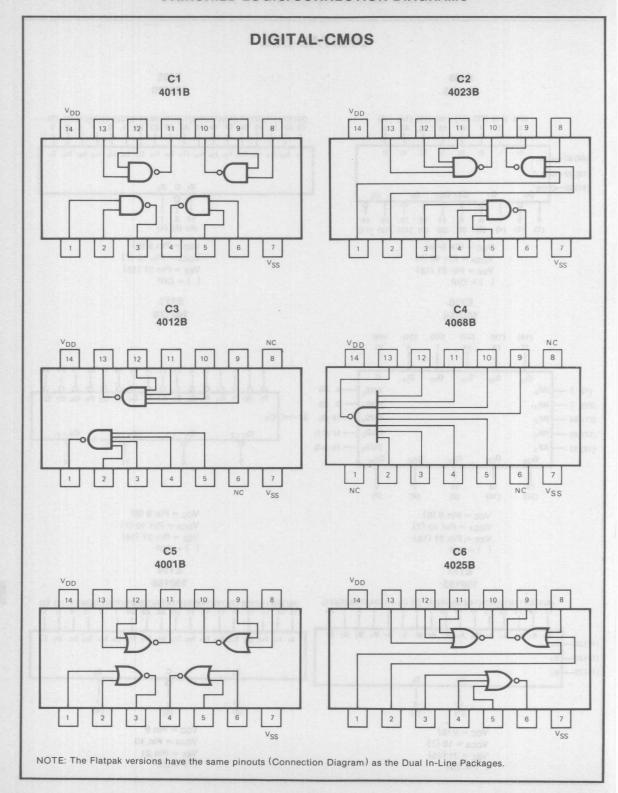


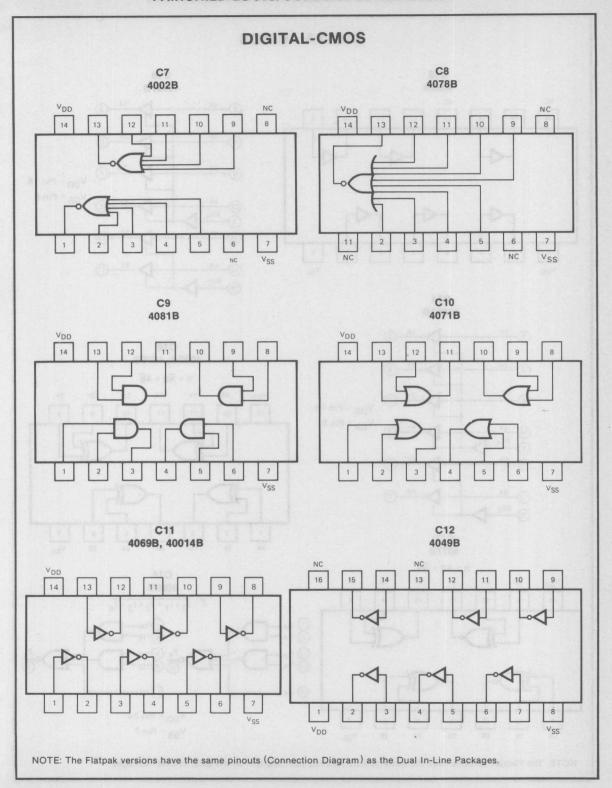
E107 100181



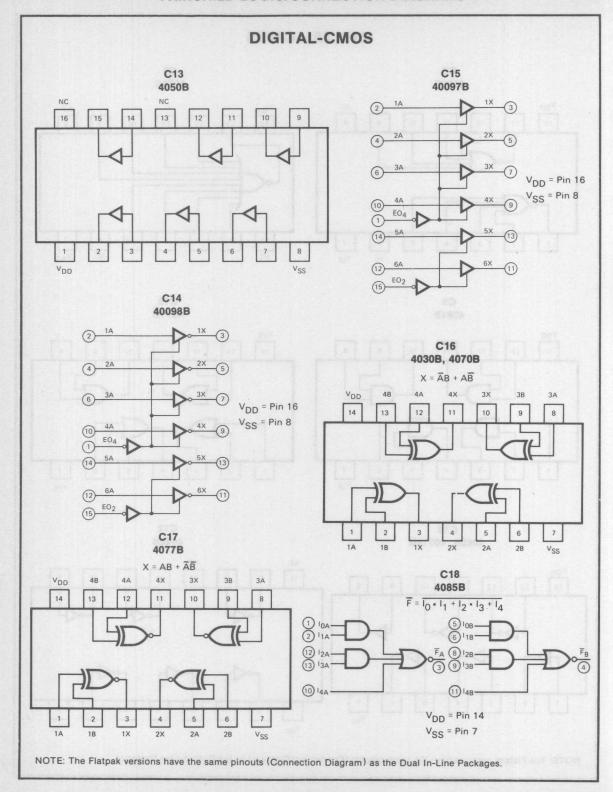
V_{CC} = Pin 9 (6) V_{CCA} = Pin 10 (7) V_{EE} = Pin 21 (18) () = DIP

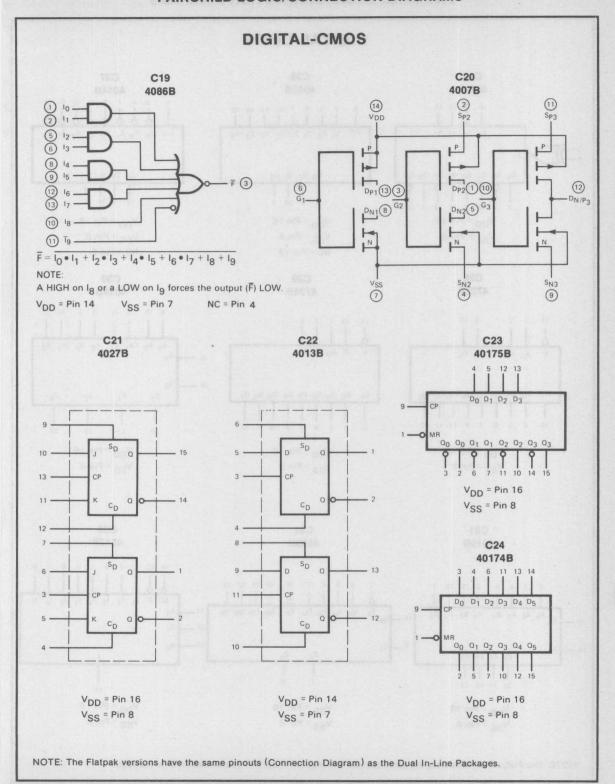


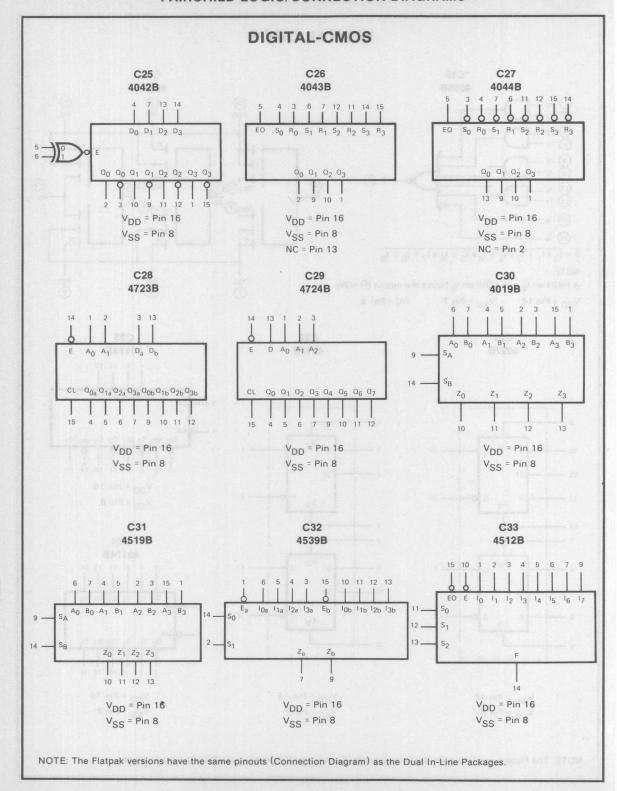


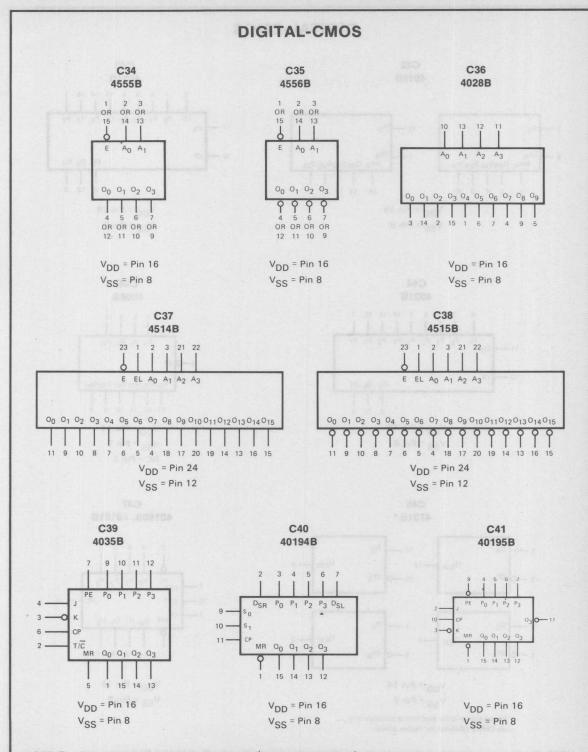


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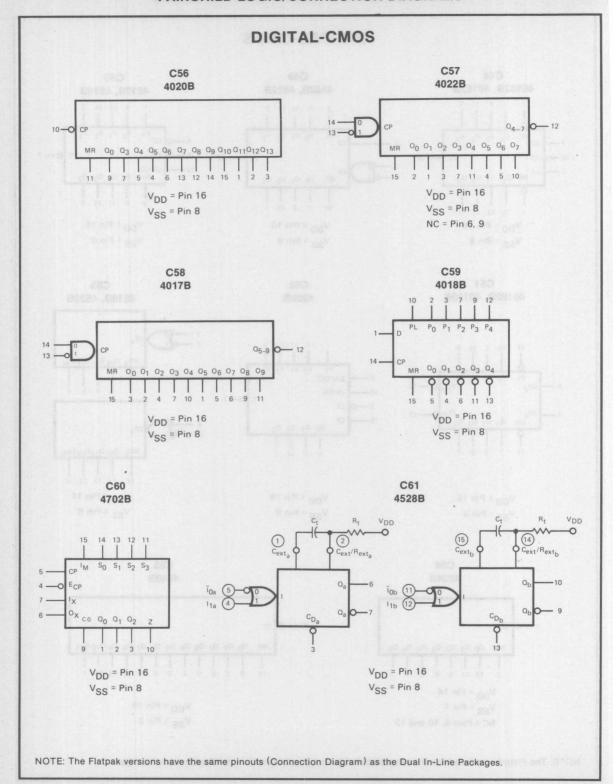




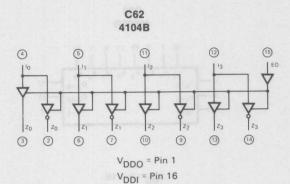


NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

DIGITAL-CMOS C43 C42 4015B 4014B CPA MRA QOAQ1AQ2AQ3A Q5 Q6 Q7 MRB Q08 Q18 Q28 Q38 2 12 13 12 11 2 3 10 14 V_{DD} = Pin 16 V_{DD} = Pin 16 V_{SS} = Pin 8 VSS = Pin 8 C45 C44 4021B 4006B 4 13 14 15 1 Da Db Dc Dd P3 P4 P5 P6 P7 3-0 CP Q3a Q3b Q3c Q4c Q3d Q4d 05 06 07 12 3 V_{DD} = Pin 16 V_{DD} = Pin 14 VSS = Pin 8 VSS = Pin 7 NC = Pin 2 C46 C47 4731B * 40160B, 40161B 0_{63A} Q63B 13 -Po P1 P2 P3 CET MR Q0 01 02 03 DD Q_{63C} Q63D CPC 14 13 12 11 V_{DD} = Pin 14 V_{DD} = Pin 16 V_{SS} = Pin 7 VSS = Pin 8 *Pinout shown is for dual in-line package only. See CMOS databook for flatpak pinout. NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

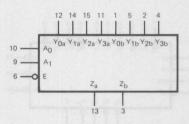


DIGITAL-CMOS



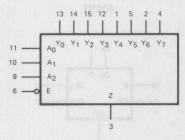
C64 4052B

VSS = Pin 8

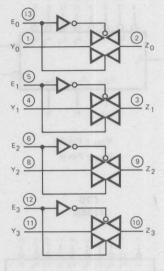


V_{DD} = Pin 16 V_{SS} = Pin 8 V_{EE} = Pin 7

> C65 4051B

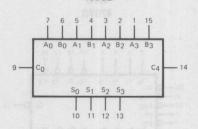


V_{DD} = Pin 16 V_{SS} = Pin 8 V_{EE} = Pin 7 C63 4016B, 4066B



 $V_{DD} = Pin 14$ $V_{SS} = Pin 7$

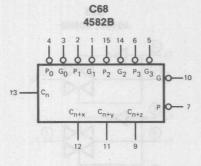
> C66 4008B



 $V_{DD} = Pin 16$ $V_{SS} = Pin 8$

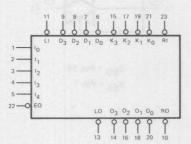
NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

DIGITAL-CMOS



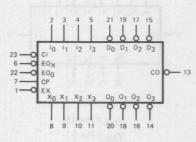
 $V_{DD} = Pin 16$ $V_{SS} = Pin 8$

> C70 4704B

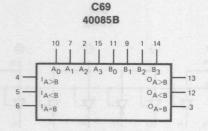


V_{DD} = Pin 24 V_{SS} = Pin 12

> C72 4707B

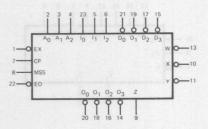


V_{DD} = Pin 24 V_{SS} = Pin 12



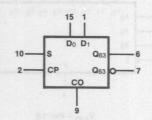
V_{DD} = Pin 16 V_{SS} = Pin 8

> C71 4705B



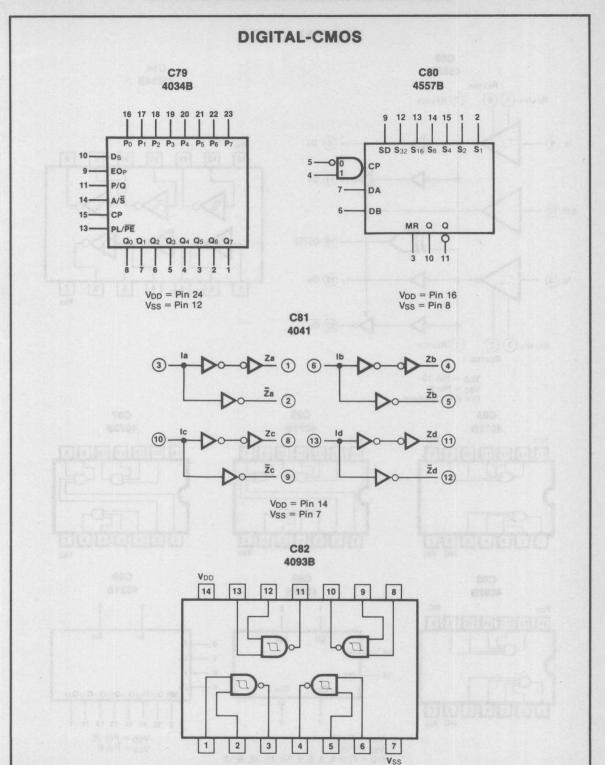
 $V_{DD} = Pin 24$ $V_{SS} = Pin 12$

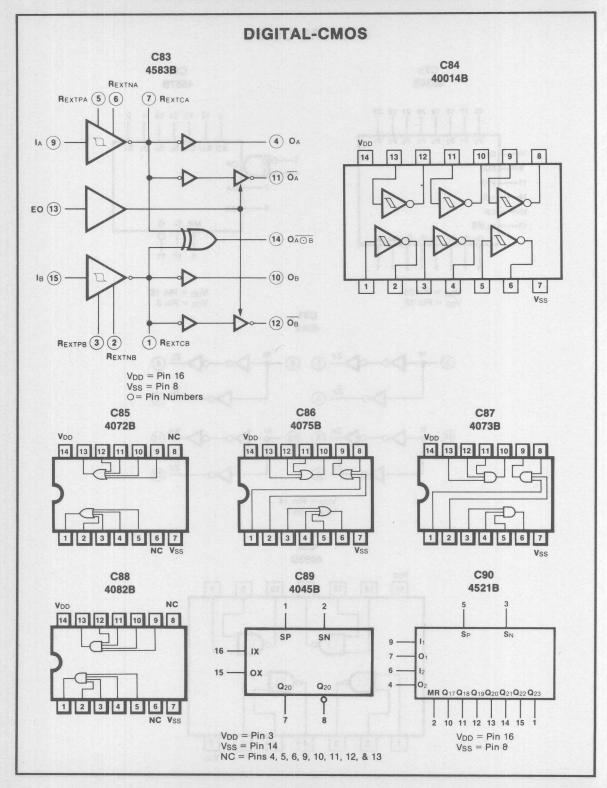
> C78 4031B

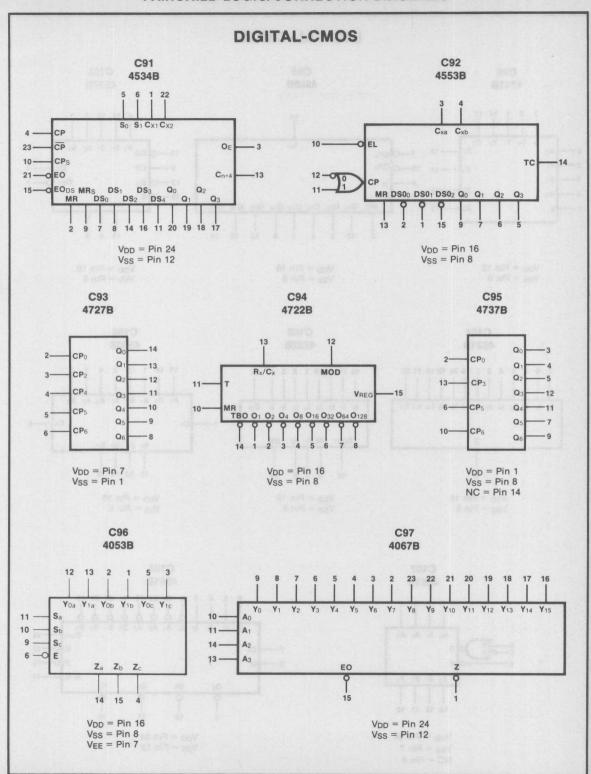


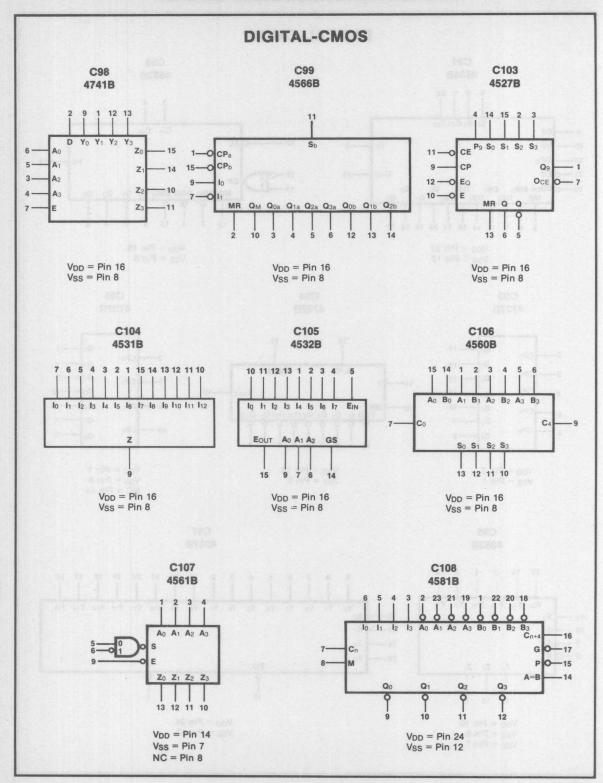
V_{DD} = Pin 16 V_{SS} = Pin 8 NC = Pins 3, 4, 5, 11, 12, 13, 14

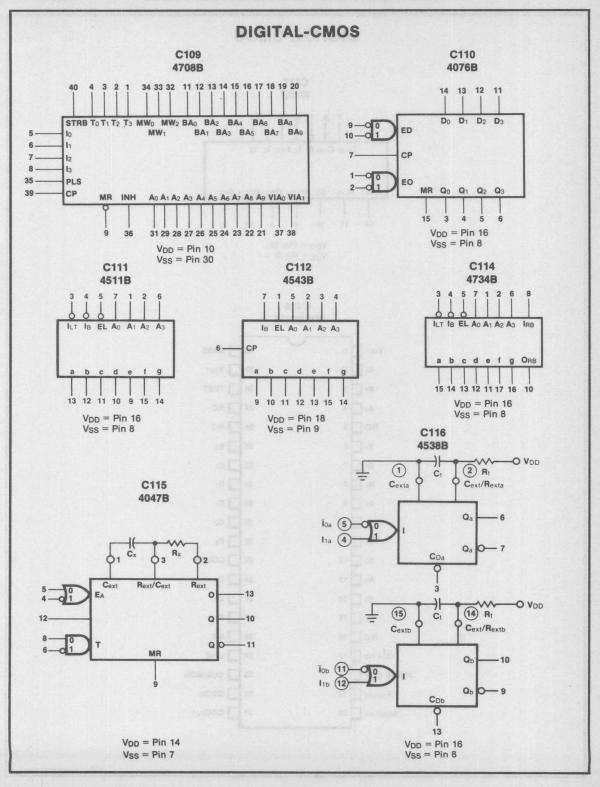
NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

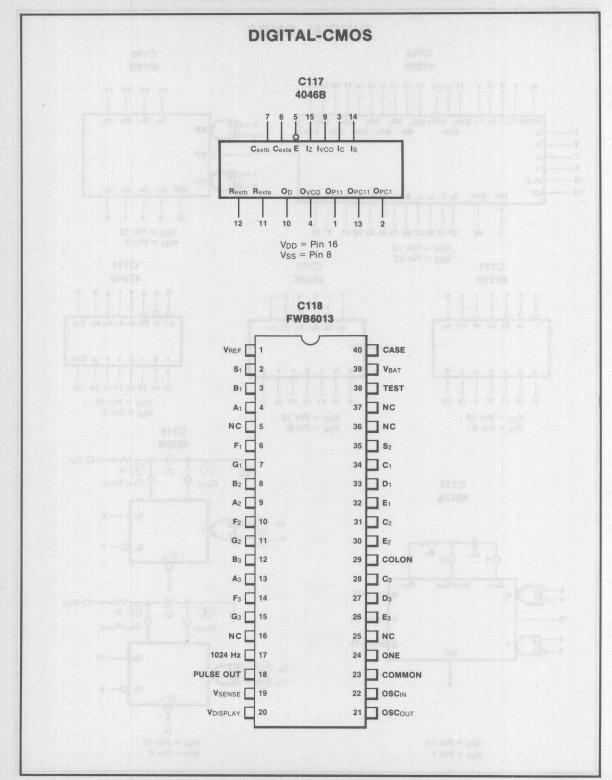


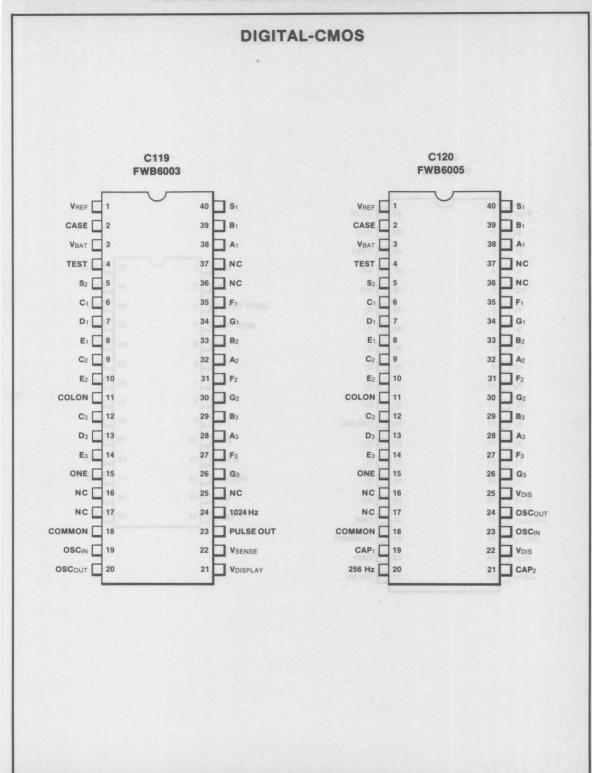


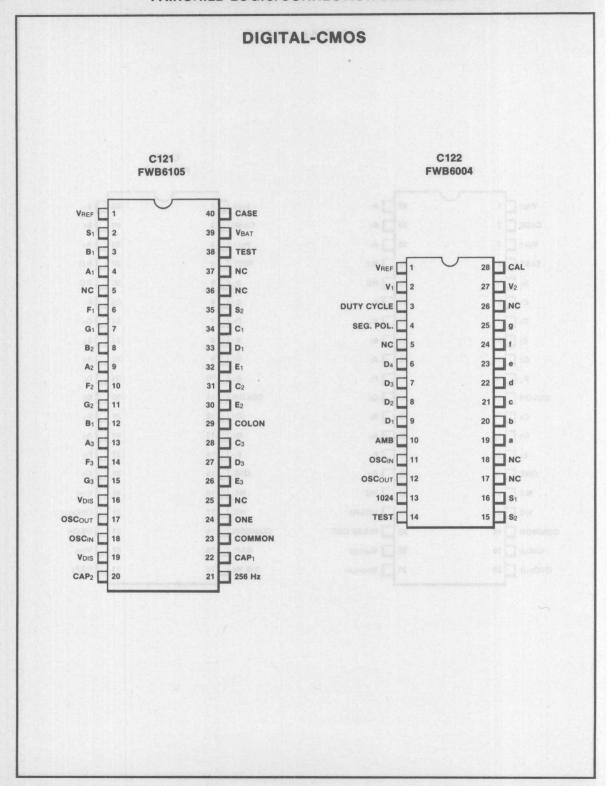


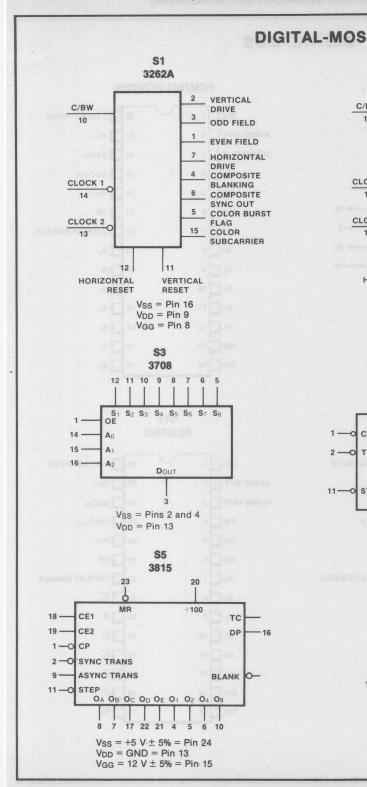


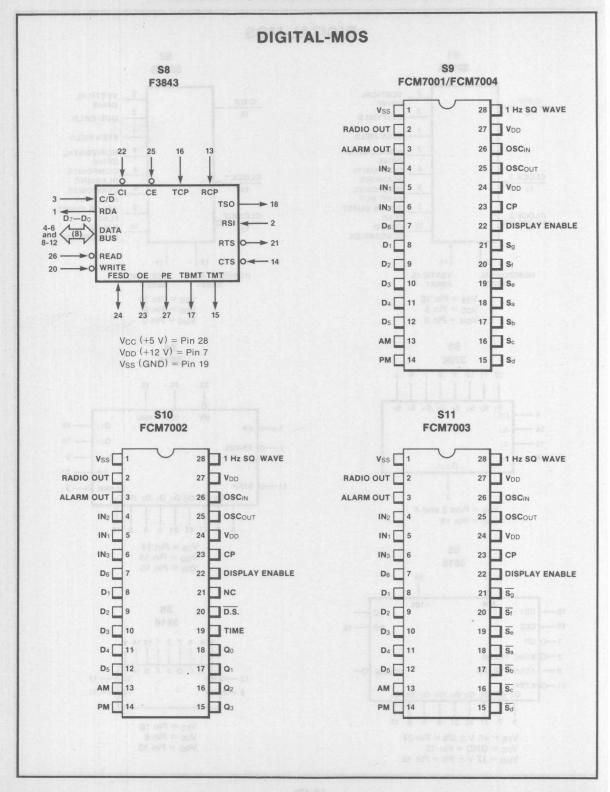


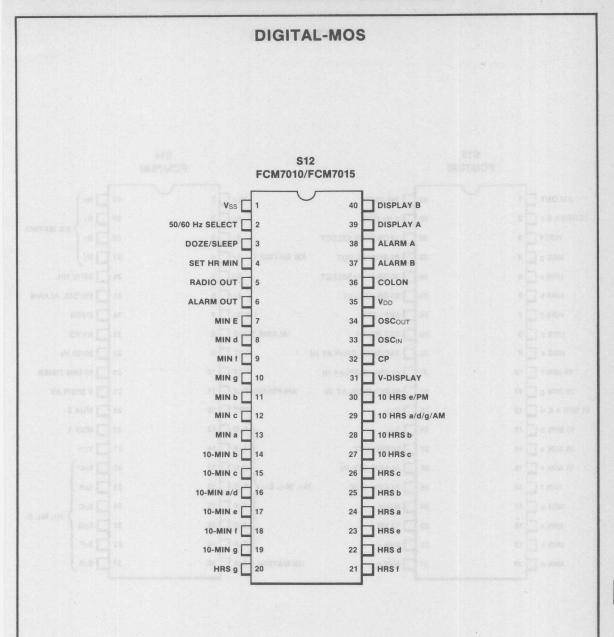


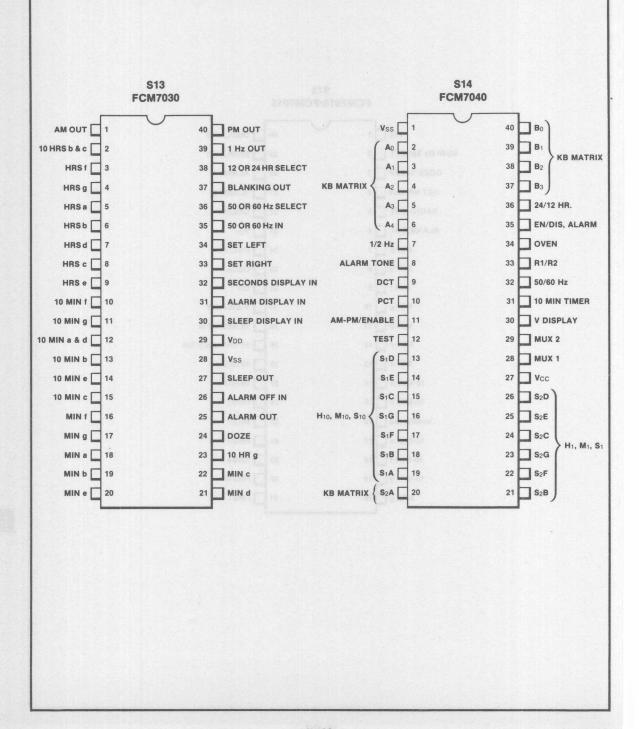


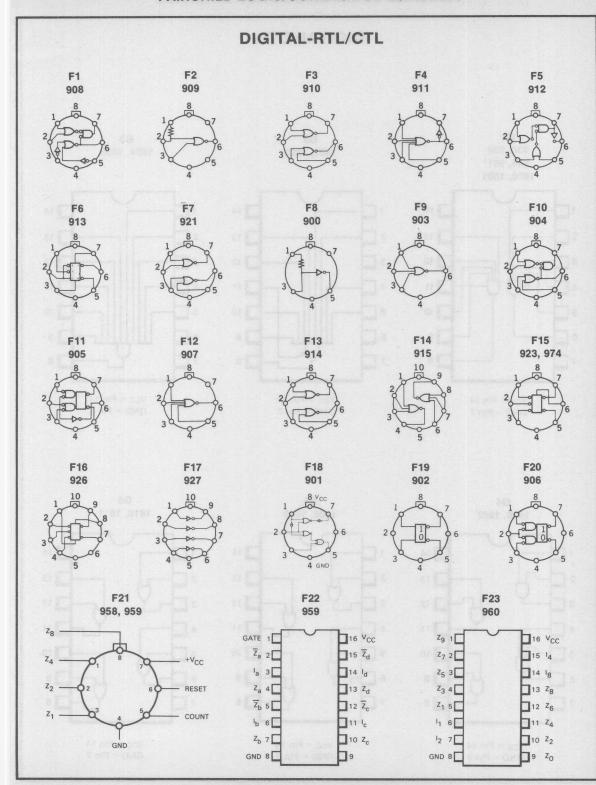


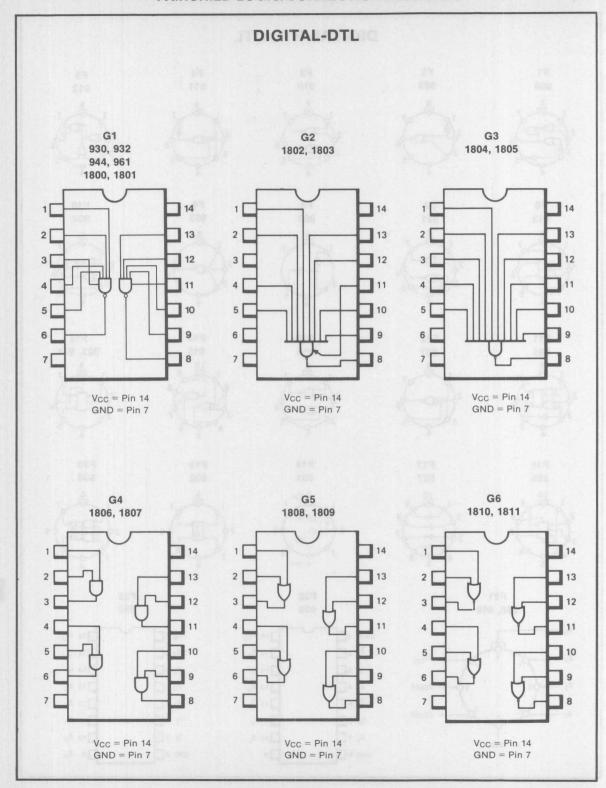




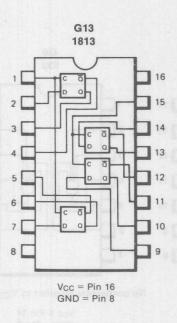


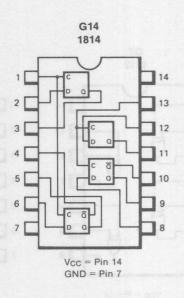


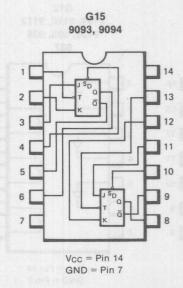


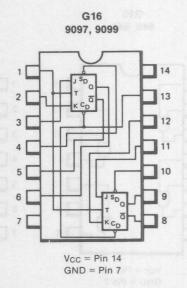


DIGITAL-DTL

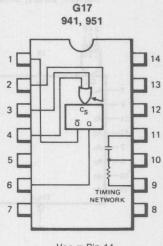




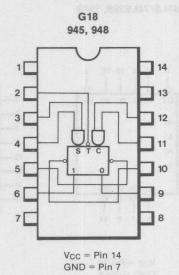




DIGITAL-DTL

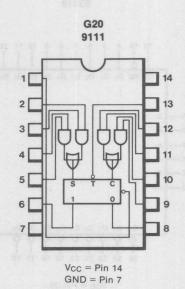


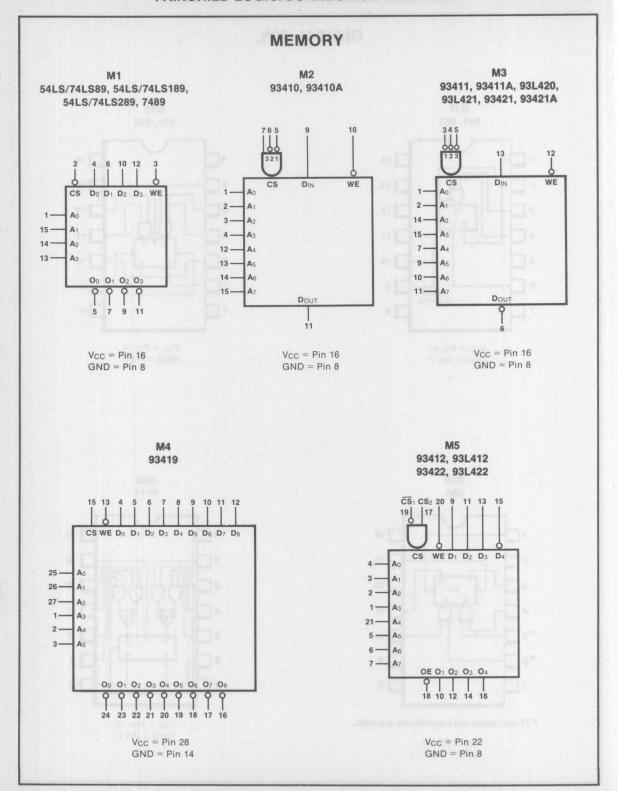
Vcc = Pin 14 GND = Pin 7

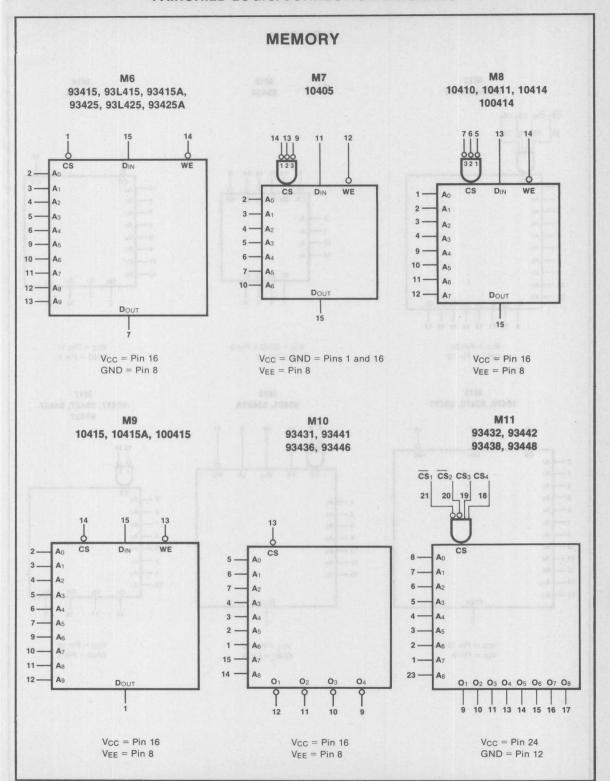


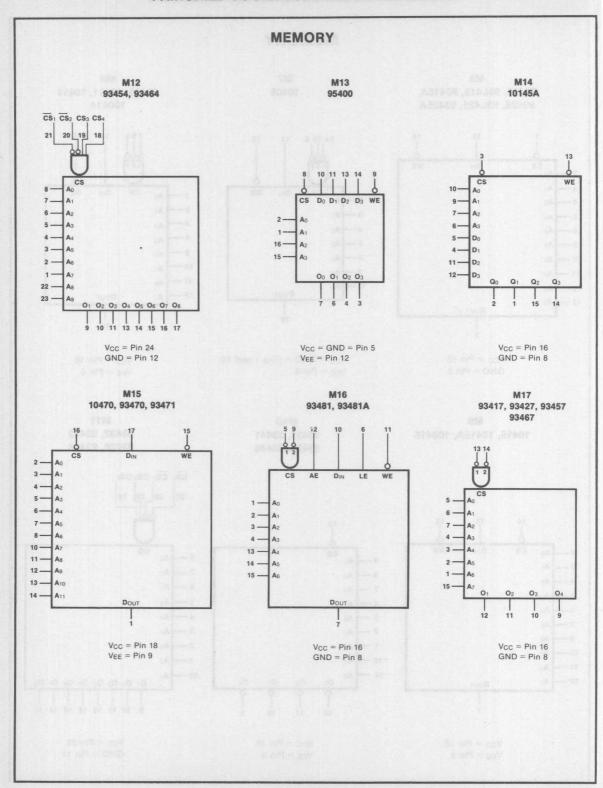
*These inputs are capacitively coupled.

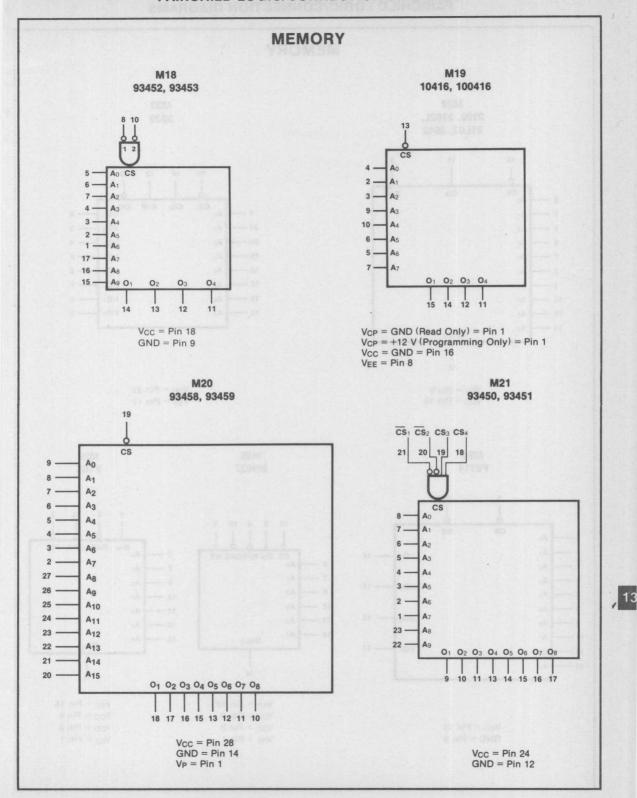
V_{CC} = Pin 14 GND = Pin 7

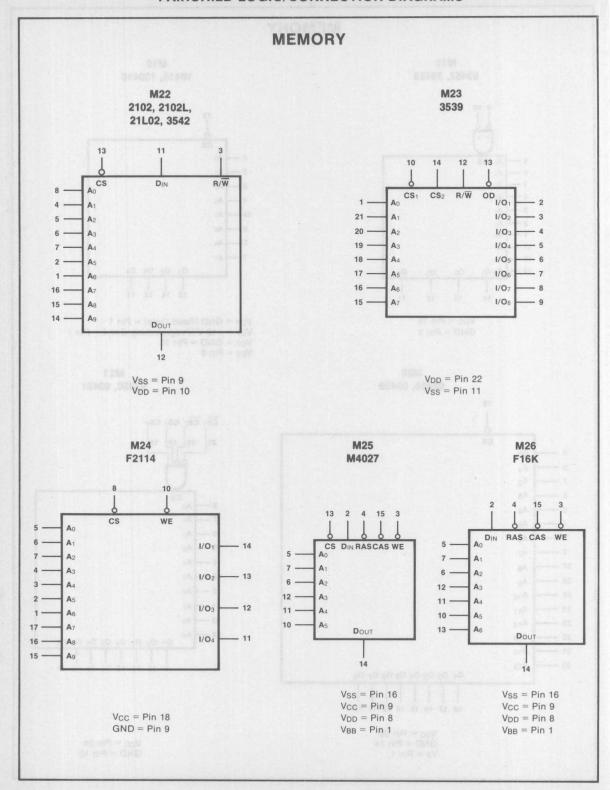


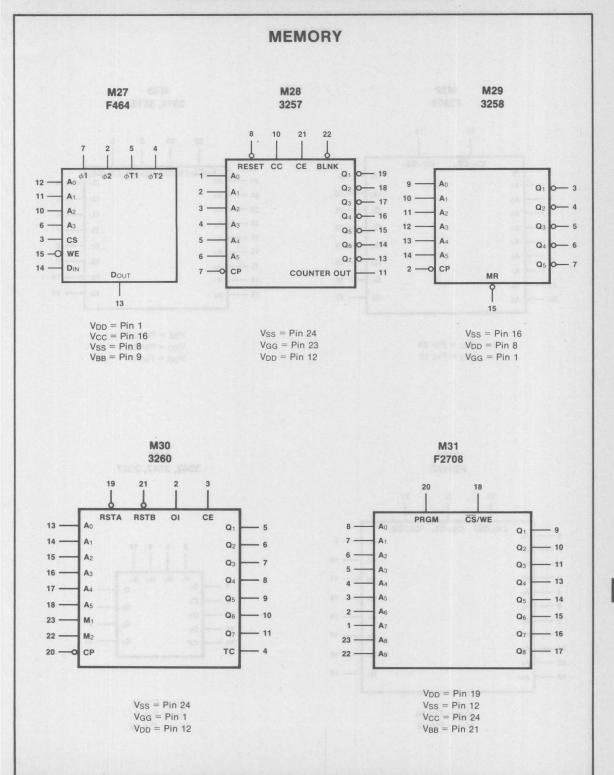


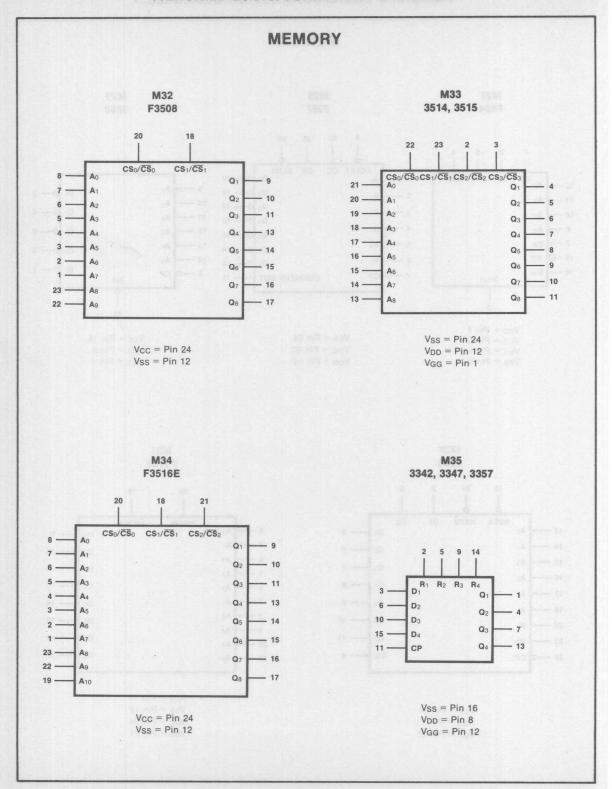


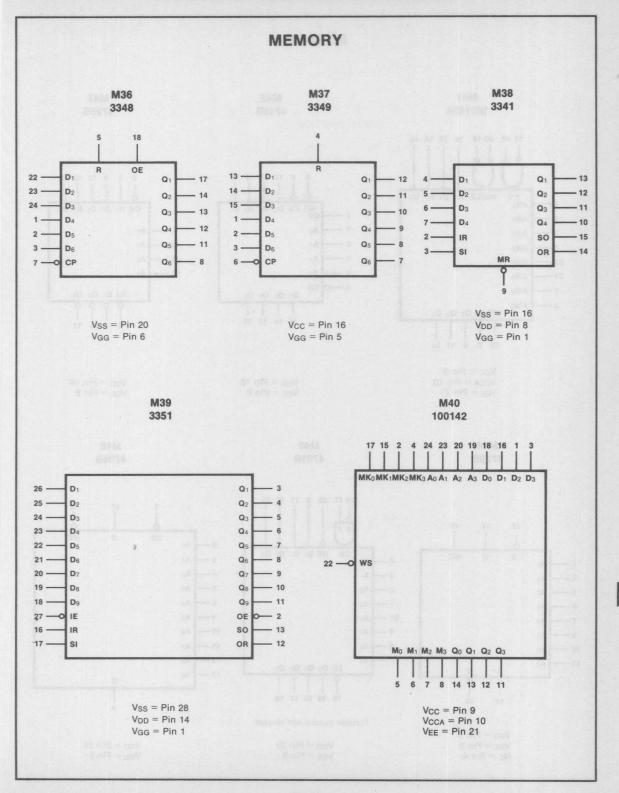


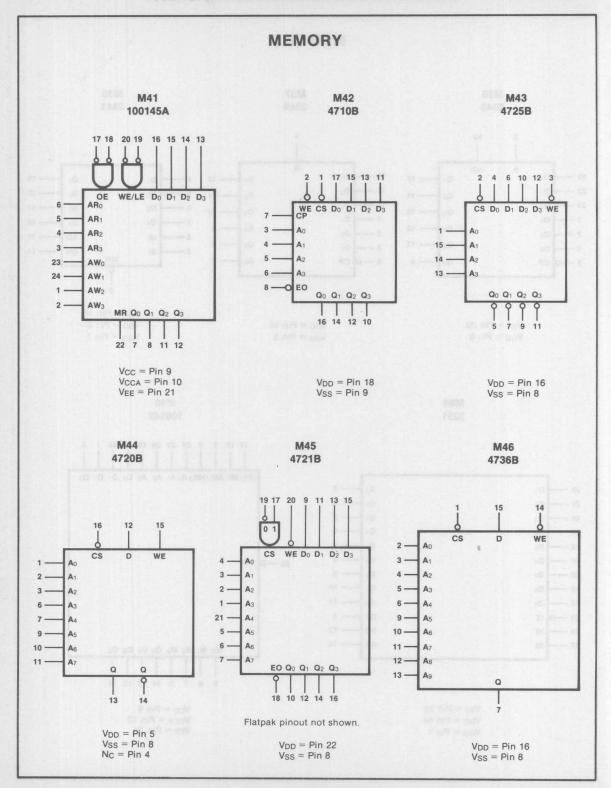






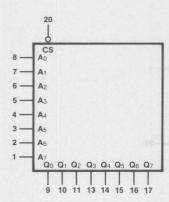




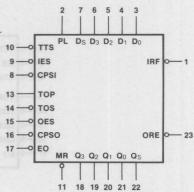


MEMORY

M47 4735B



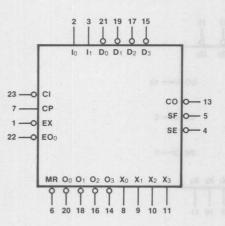
V_{DD} = Pin 24 V_{SS} = Pin 12 NC = Pins 18, 19, 21, 22, 23 4703B



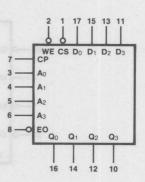
M48

V_{DD} = Pin 24 V_{SS} = Pin 12

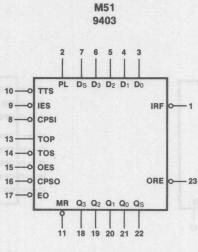
M49 4706B



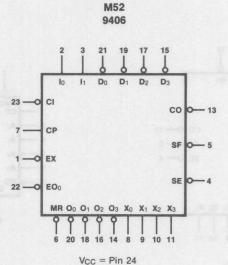
 $V_{DD} = Pin 24$ $V_{SS} = Pin 12$ M50 9410



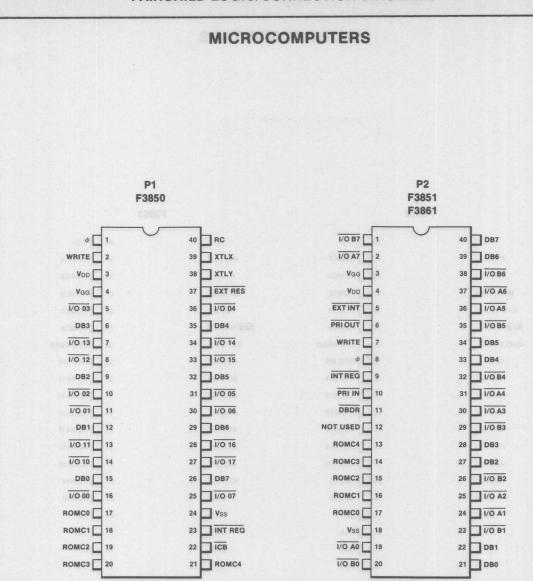
V_{CC} = Pin 18 GND = Pin 9

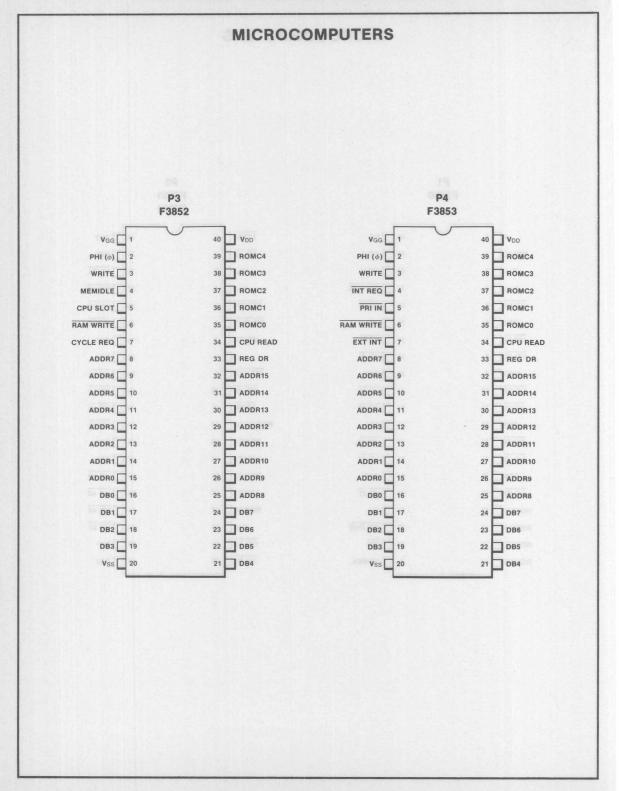


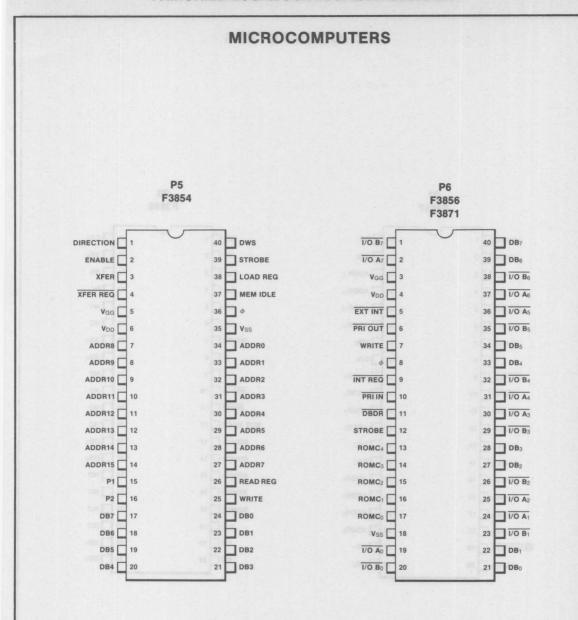
V_{CC} = Pin 24 GND = Pin 12

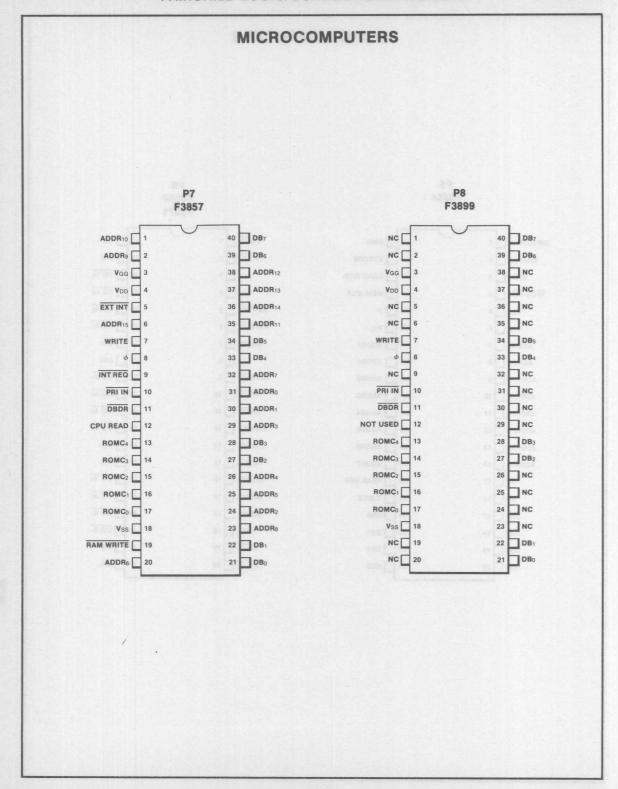


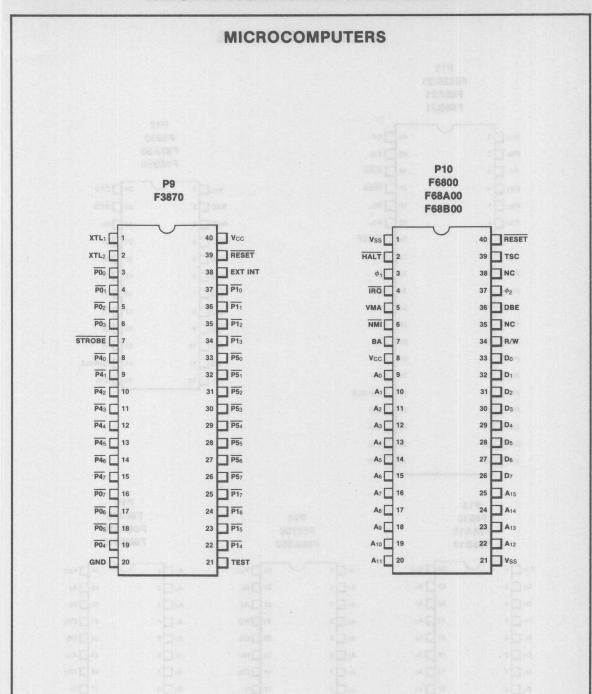
GND = Pin 12

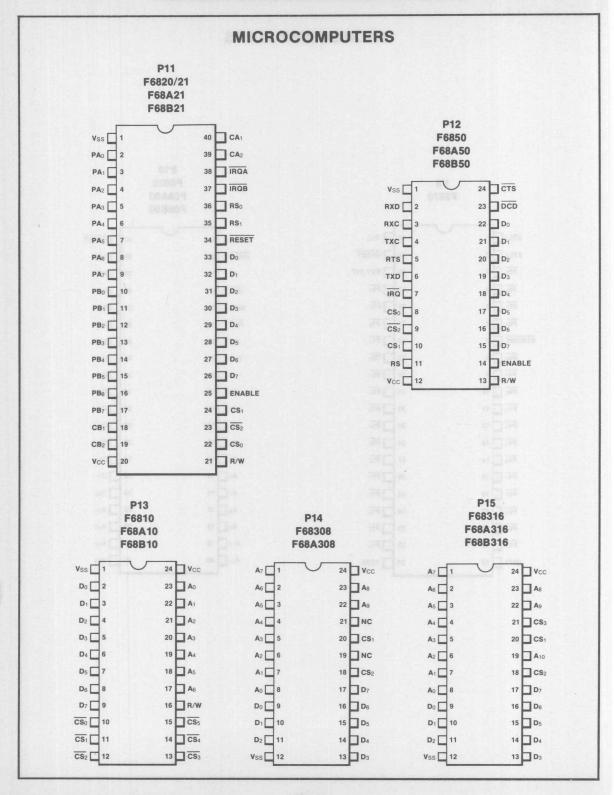


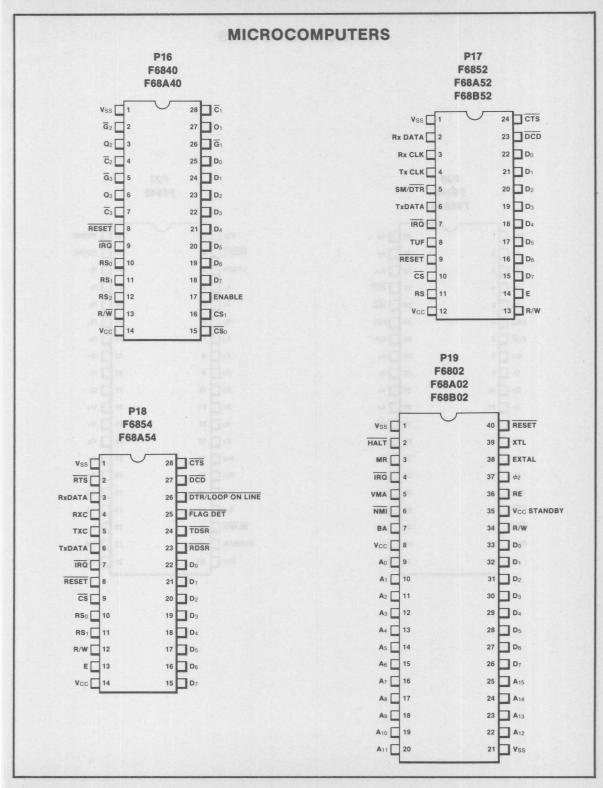


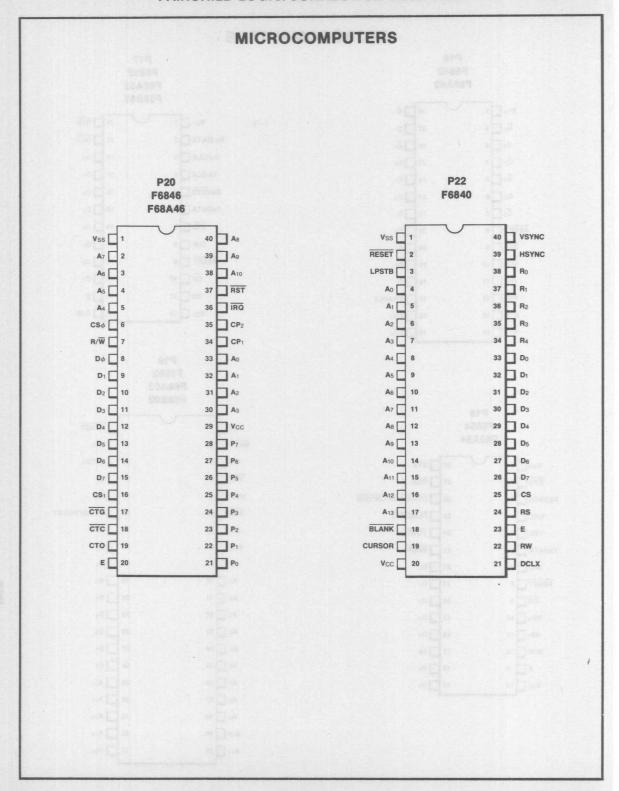


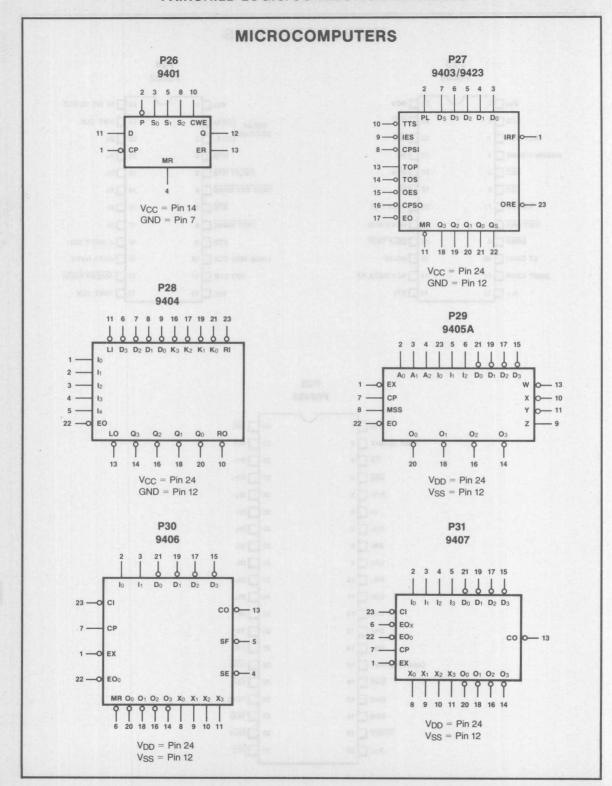


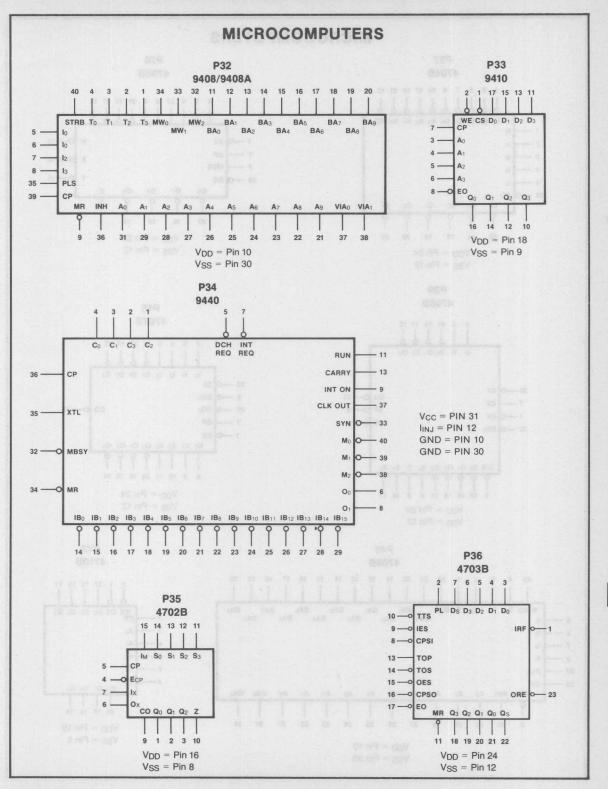


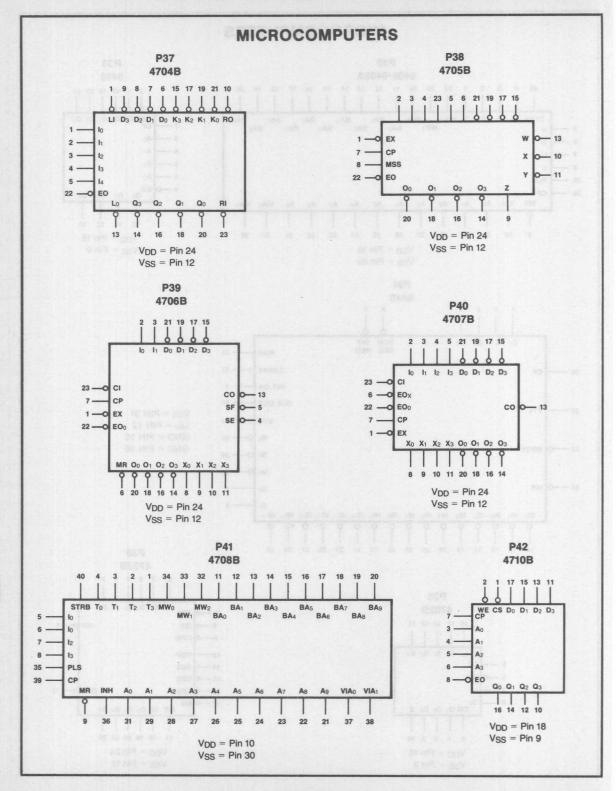




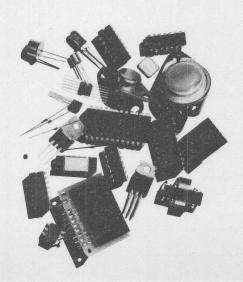








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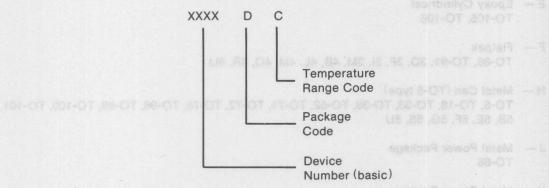
ORDERING INFORMATION

DISCRETE PRODUCTS

Fairchild discrete products may be ordered by the Device Number listed in either the Product Index (Section 1) or the selection guides (Sections 2 through 4).

INTEGRATED CIRCUITS

Specific ordering codes are given in the Product Index in Section 1. The selection guides given in Section 5 through 11 list only "basic" Device Numbers. This basic number is used to form part of a simplified purchasing code where the package style and temperature range are defined as follows:



Coding will differ on second-source devices. If questions arise on the proper ordering code on any Fairchild device, check with your local Fairchild Salesperson or Representative before ordering.

Temperature Range

Four basic temperature grades are in common use:

C = Commercial 0°C to +70/75°C (exc. CMOS) -40°C to +85°C (CMOS)

V = Vehicular -40°C to +85°C

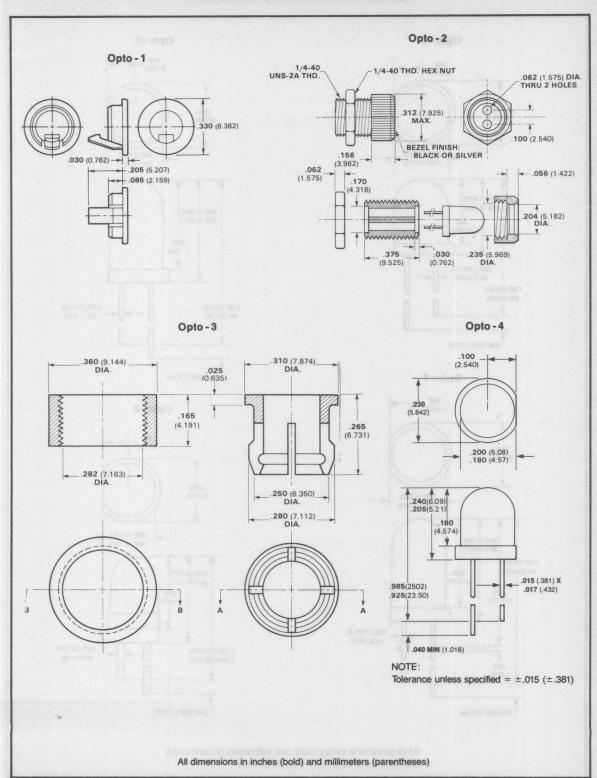
L = Limited Military -20°C to +85°C (LIC) -55°C to +85°C (MOS)

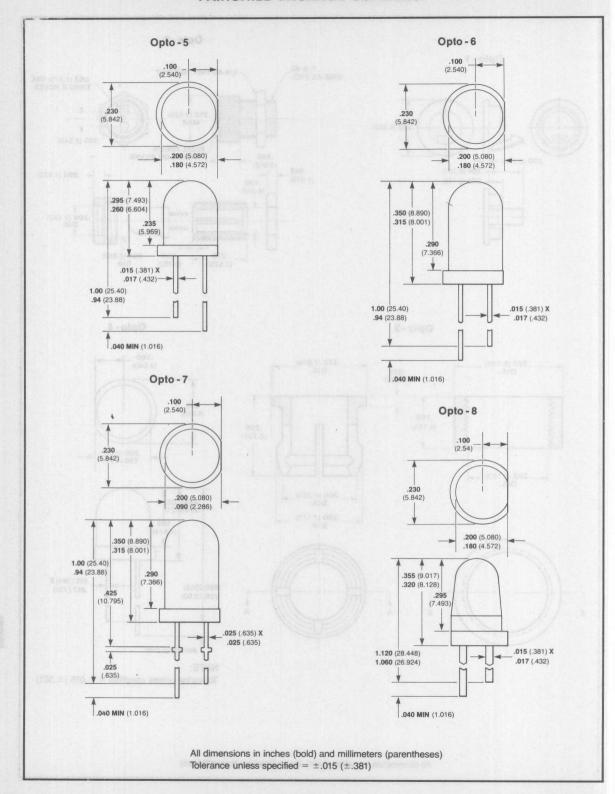
M = Military -55°C to +125°C

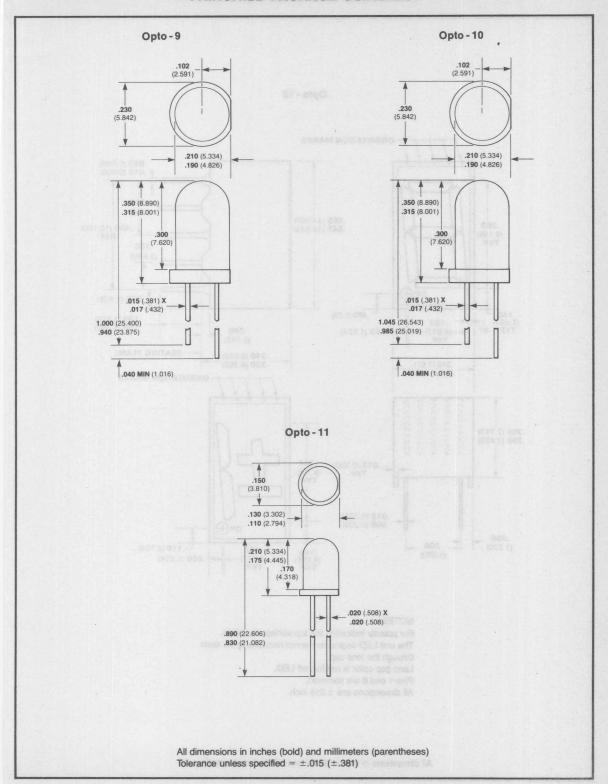
Package Code

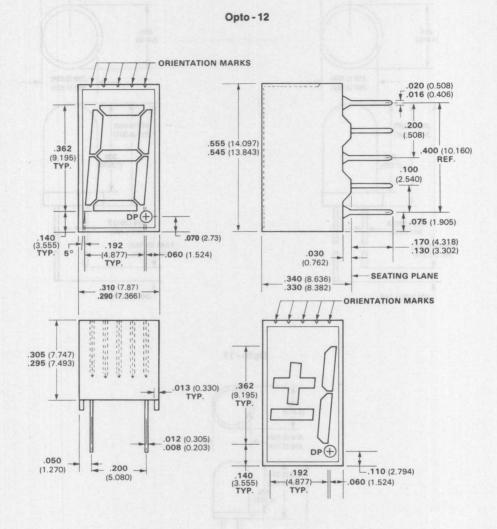
One letter represents the basic package style. Different package outlines exist within each package style to accommodate varying die sizes and number of leads.

- D— Ceramic/Hermetic Dual In-line QA, QB, TO-116, 6A, 6B, 6D, 6E, 6F, 6I, 6J, 6M, 6N, 6Q, 6Z, 7A, 7B, 7D, 7F, 7H, 7I, 7L, 7M, 7R, 7Y, 8E, 8F, 8I, 8R, 8T
- E— Epoxy Cylindrical TO-105, TO-106
- F— Flatpak TO-86, TO-91, 3D, 3F, 3I, 3M, 4B, 4L, 4M, 4Q, 4R, 8U
- H— Metal Can (TO-5 type)
 TO-5, TO-18, TO-33, TO-39, TO-52, TO-71, TO-72, TO-78, TO-96, TO-99, TO-100, TO-101, 5B, 5E, 5F, 5G, 5S, 5U
- J Metal Power Package TO-66
- K Metal Power Package TO-3
- P— Plastic Dual In-line TO-116, 4K, 6V, 8K, 8P, 9A, 9B, 9C, 9H, 9J, 9M, 9N, 9U, 9Y, 9Z
- T Plastic Mini-DIP 9T. 9V (T1), 9V (T2), 9V (T3), 9W (P3), 9W (P4), 9W (P5), 9W (P6)
- H Plastic Power Package TO-220
- U1 Power Watt, Dynawatt TO-220, 8Y, 8Z
- W Epoxy TO-92







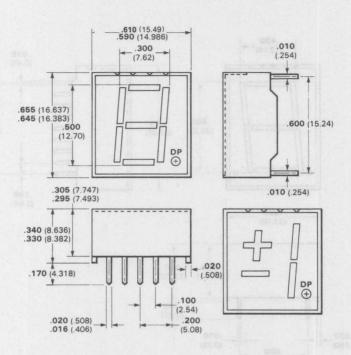


NOTES:

For polarity indication the top surface is ribbed. The unit LED segments cannot necessarily be seen through the lens cap. Lens cap color is red for red LED. Pins 1 and 6 are common. All dimensions are \pm .015 inch.

All dimensions in inches (bold) and millimeters (parentheses)

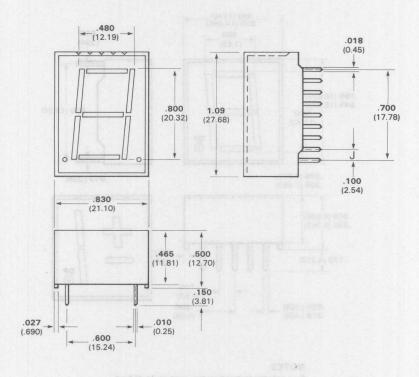
Opto - 13



NOTES:

For polarity indication the surface is ribbed.
The unlit LED segments cannot necessarily be seen through the lens cap.
Lens cap color is red for red LED
Pins 3 and 8 are common
All dimensions are ±.015 inch

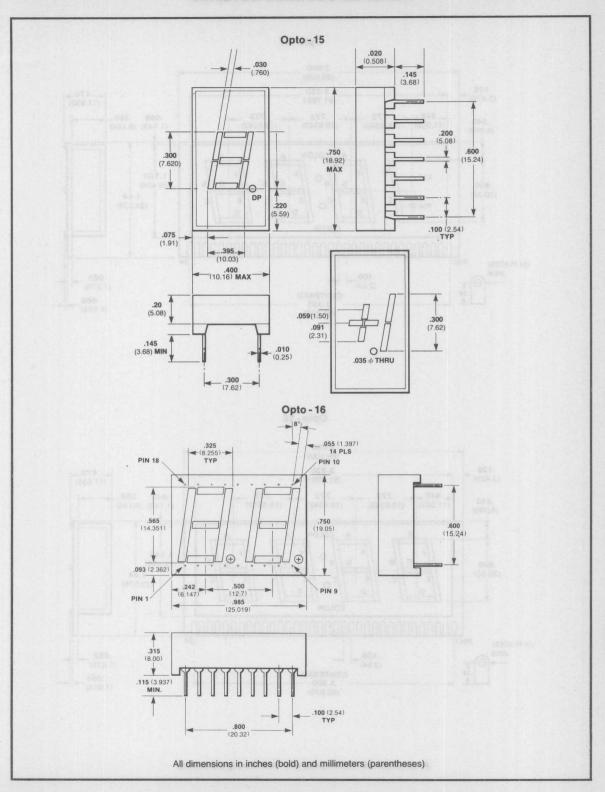
Opto-14

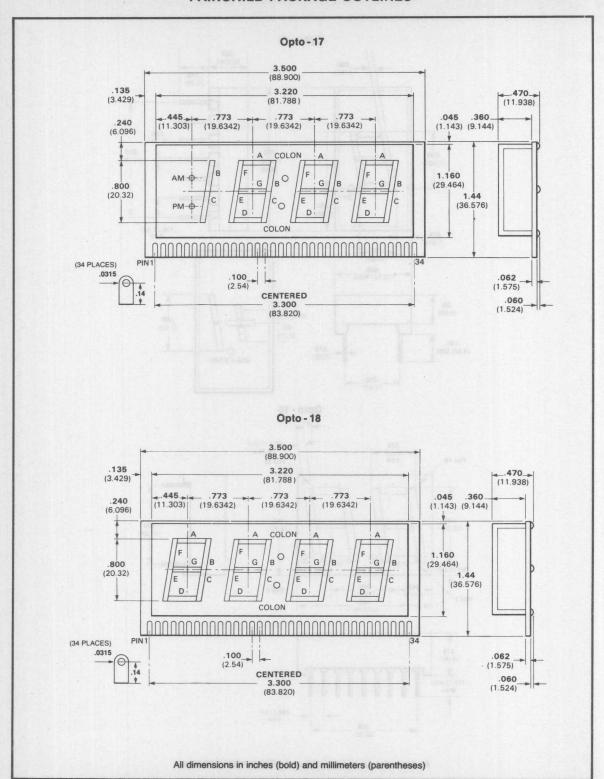


NOTES:

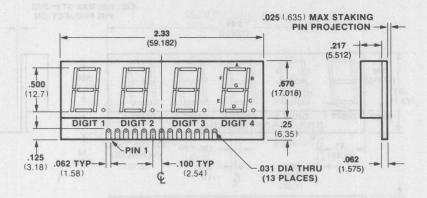
For polarity indication the surface is ribbed.
The unlit LED segments cannot necessarily be seen through the lens cap.
Lens cap color is red for red LED
Pins 4, 6, 12 and 17 are common
All dimensions are ±.015 inch

All dimensions in inches (bold) and millimeters (parentheses)

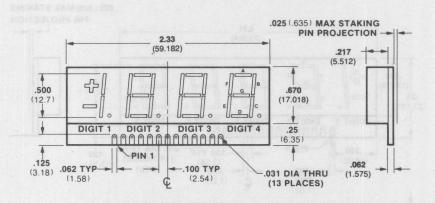




Opto - 20

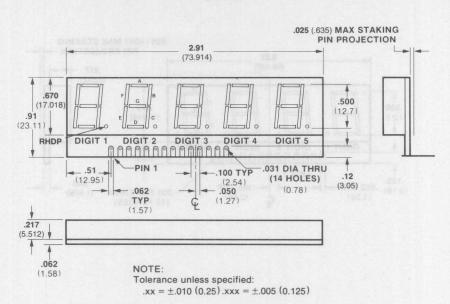


Opto-21

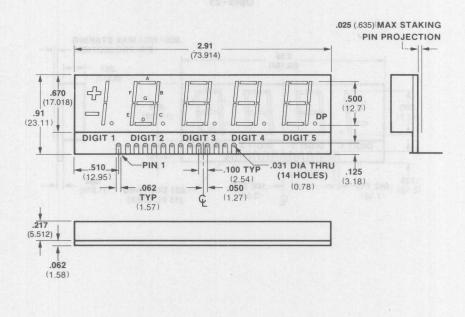


All dimensions in inches (bold) and millimeters (parentheses)

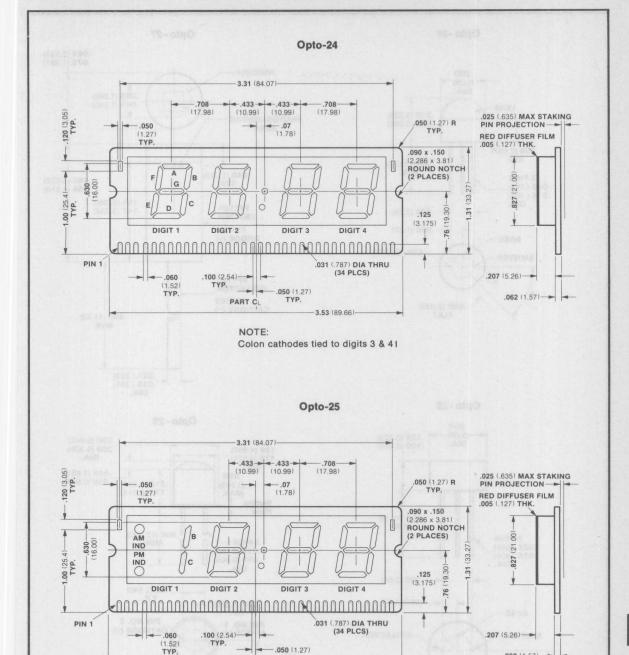




Opto - 23



All dimensions in inches (bold) and millimeters (parentheses)



NOTE:

PART CL

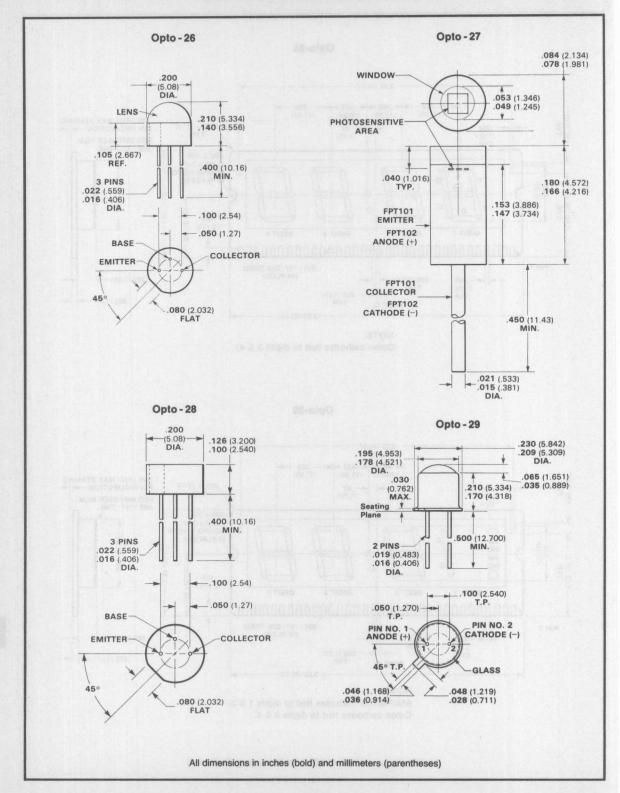
AM/PM Ind. cathodes tied to digits 1 & 2. Colon cathodes tied to digits 3 & 4.

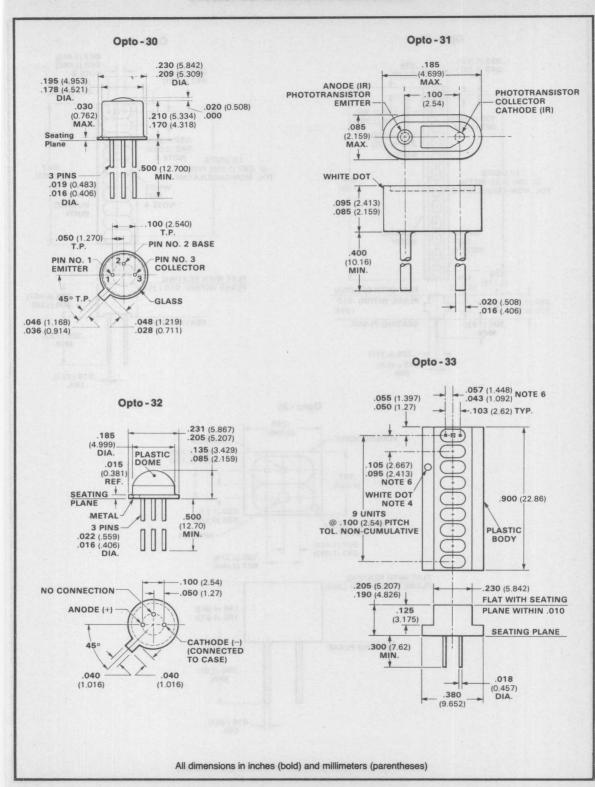
-3.53 (89.66)—

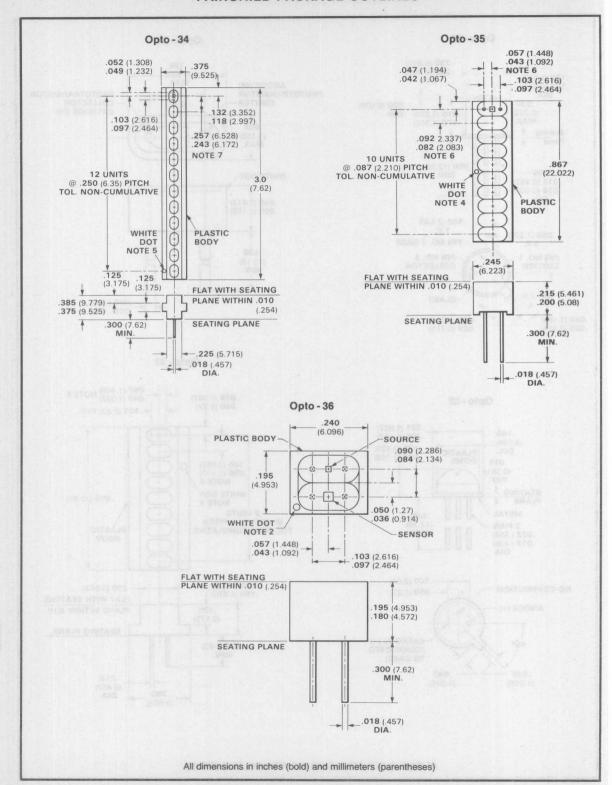
TYP.

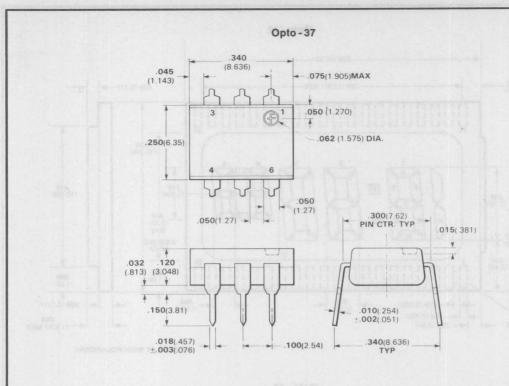
All dimensions in inches (bold) and millimeters (parentheses)

.062 (1.57)

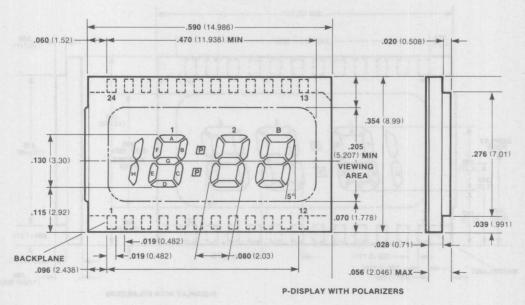






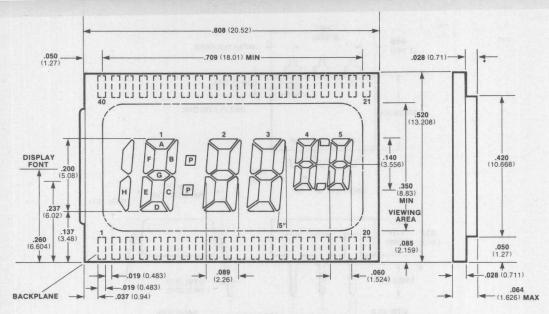






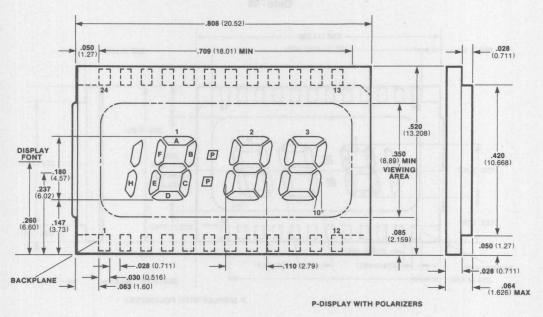
All dimensions in inches (bold) and millimeters (parentheses)

14

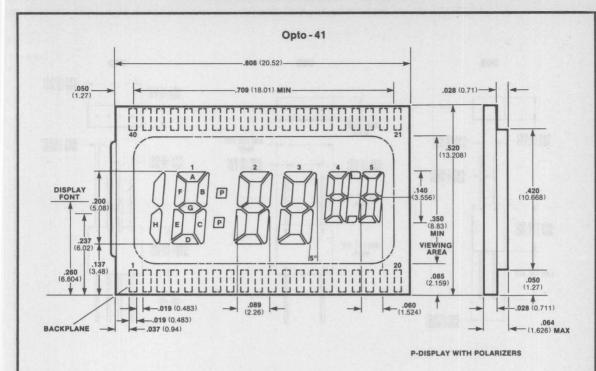


P-DISPLAY WITH POLARIZERS

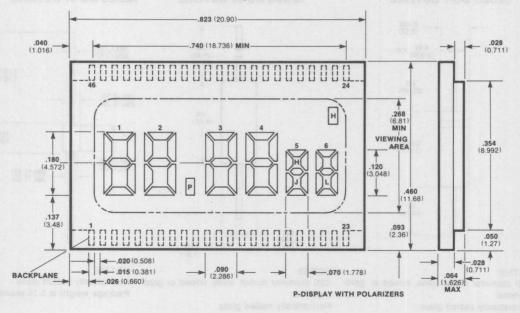


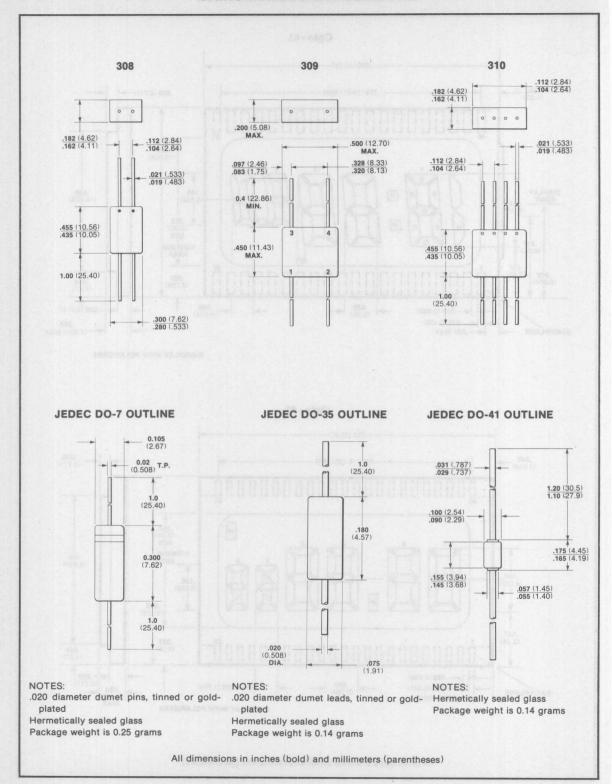


All dimensions in inches (bold) and millimeters (parentheses)

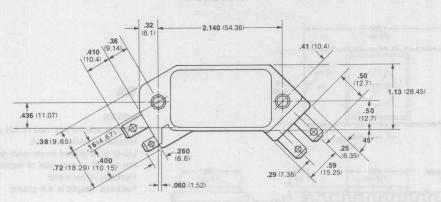




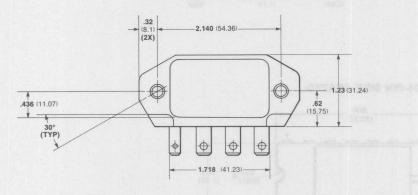




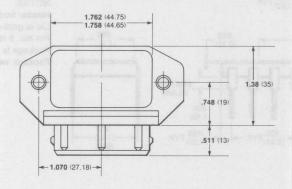
MODULE A



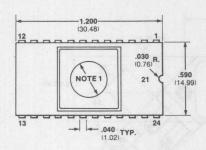
MODULE B

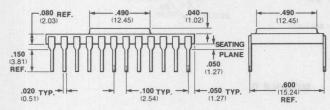


MODULE C



44-PIN SIDE-BRAZED



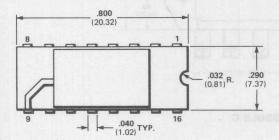


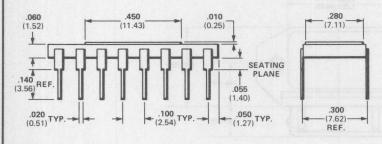
QA

NOTES:

Optical aperture is .300 (7.62) dia. Header is white ceramic Lid is gold-plated kovar with glass window Pin No. 21 is common to substrate Package is hermetic Package weight is 4.5 grams

24-PIN SIDE-BRAZED



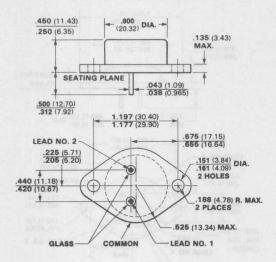


QB

NOTES:

Header body is black ceramic Lid is gold-plated kovar Pin No. 9 is common to substrate Package is hermetic Package weight is 1.1 grams

JEDEC TO-3 OUTLINE

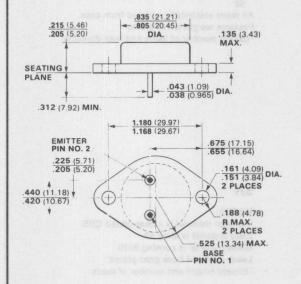


AW

NOTES:

Leads 1 and 2 electrically isolated from case Case is third electrical connection Steel base Package weight: 12.27 grams

JEDEC TO-3 OUTLINE



GD

NOTES:

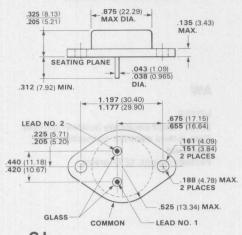
Pins are solder-dipped copper
Pins 1 and 2 electrically isolated from case
Case is third electrical connection
Copper base with braised moly disc. Pins are
soldered in
Package weight is 18.0 grams
Aluminum cap

GF

NOTES:

Pins are alloy 52
Pins 1 and 2 electrically isolated from case
Case is third electrical connection
Copper base with soldered in pins
Aluminum cap
Package weight is 17.9 grams

JEDEC TO-3 OUTLINE*



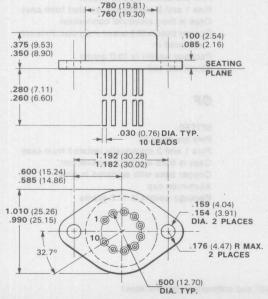
GJ NOTES:

Leads are gold-plated or solder dipped alloy 52

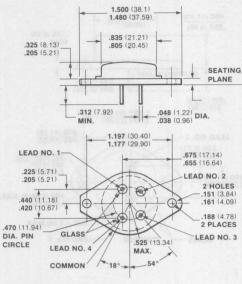
Leads 1 and 2 electrically isolated from case Case is third electrical connection Aluminum package with copper slug, pins are soldered in

Package weight is 7.4 grams
Aluminum cap (may be dome-type, depending prod. line)
*Except lead diameter

JEDEC TO-3 OUTLINE*



JEDEC TO-3 OUTLINE*



GK

NOTES:

Leads are gold-plated or solder dipped alloy 52

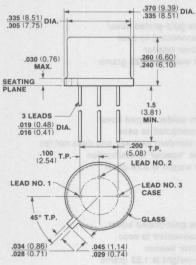
All leads electrically isolated from case Package weight is 7.4 grams *Except number of leads and lead diameter

5H

NOTES

Package material is nickel-plated CRS Lead material is alloy 52 Glass material is corning 9010 Lead, post and base gold-plated *Except height and number of leads

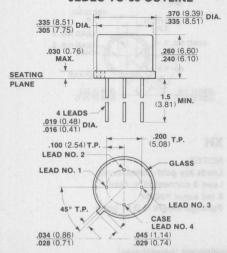
JEDEC TO-5 OUTLINE



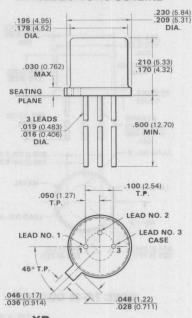
XA

NOTES: Leads are gold-plated kovar Lead 3 connected to case 15 mil kovar header Package weight is 1.11 grams

JEDEC TO-33 OUTLINE



JEDEC TO-18 OUTLINE



XB

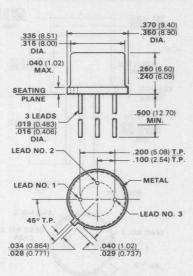
NOTES: Leads are gold-plated kovar Lead 3 connected to case 8 mil kovar header Package weight is 0.44 gram

XR

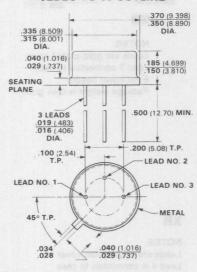
NOTES:

Leads are gold-plated kovar
Lead 4 is connected to case
Internal collector lead length is 75 mils
Island is 60 mils wide, 80 mils long and 15
mils thick
Package weight is 1.22 grams

SEDEC 10-00 EAIRCHII D PACKAGE PLITI INEC



JEDEC TO-39 OUTLINE*



HC

NOTES:

Leads are gold-plated kovar Lead 3 connected to case Package weight is 1.23 grams 50 mil kovar header *Dimensions same as JEDEC TO-39 except for can height

NOTES:

Leads are gold-plated kovar Lead 3 connected to case 50 mil kovar header Package weight is 1.23 grams

CS

NOTES:

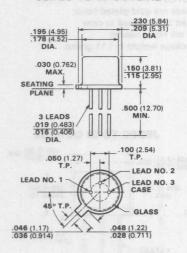
Leads are solder dipped kovar
Lead 3 connected to case
This is a standard package and does not fall
into the "special" classification
Package weight is 0.76 gram

5K

NOTES:

Leads are gold-plated kovar Lead 3 connected to case 50 mil kovar header Package weight is 1.23 grams

JEDEC TO-52 OUTLINE

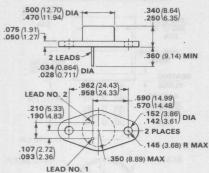


XH

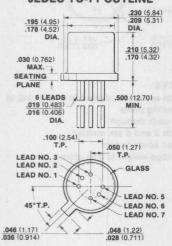
NOTES:

Leads are gold-plated kovar Lead 3 connected to case 8 mil kovar header Package weight is 0.31 gram

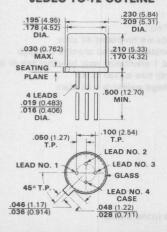
JEDEC TO-66 OUTLINE



JEDEC TO-71 OUTLINE



JEDEC TO-72 OUTLINE



GB

NOTES:

Leads are gold-plated kovar Leads 1 and 2 electrically isolated from case Case is third electrical connection Nickel-plated steel base and cap Package weight is 6.5 grams

AB

NOTES:

Leads are gold-plated kovar
Lead 3 internally connected to one island
Lead 7 internally connected to other island
Leads 4 and 8 omitted
8 mil kovar header
Package weight is 0.60 gram

HM

NOTES:

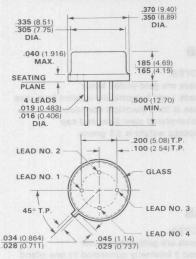
Leads are gold-plated kovar Leads 4 and 8 omitted No island 8 mil kovar header Package weight is 0.60 gram

CR

NOTES:

Leads are gold-plated kovar Lead 4 connected to case Collector electrically isolated from case Package weight is 0.36 gram

JEDEC TO-78 OUTLINE

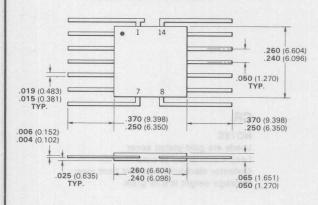


HA

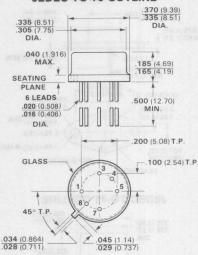
NOTES:

Leads are solder dipped to seating plane Four leads thru 50 mil kovar header Package weight is 1.08 grams

JEDEC TO-86 OUTLINE



JEDEC TO-78 OUTLINE



5C

NOTES:

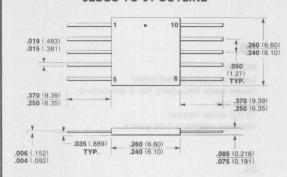
Leads are solder dipped to within .040 of seating plane
Six leads through
Leads 2 and 6 are omitted
50 mil kovar header
Package weight is 0.95 gram

31

NOTES:

Leads are tin-plated 42 alloy
Hermetically sealed alumina package
Lead 1 orientation may be either tab or dot
Cavity size is .130 (3.30)
Package weight is 0.26 gram

JEDEC TO-91 OUTLINE

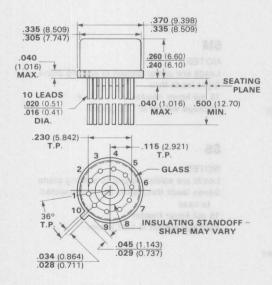


3F

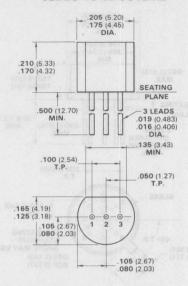
NOTES:

Leads are tin plated 42 alloy Hermetically sealed alumina package Cavity size is .130 (3.30) diameter Package weight is 0.26 grams

JEDEC TO-96 OUTLINE*



JEDEC TO-92 OUTLINE



EG

NOTES:

Package material is transfer molded thermosetting plastic Package weight is 0.25 gram

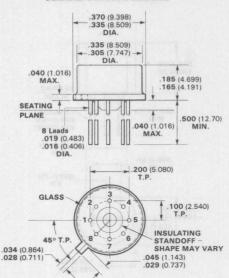
5R

Leads are gold-plated kovar. Nine leads thru, Lead No. 5 is connected to case 15 mil kovar header

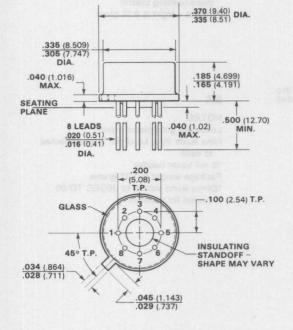
Package weight is 1.32 grams.

*Dimensions similar to JEDEC TO-96 except for standoff.

JEDEC TO-99 OUTLINE



JEDEC TO-99 OUTLINE



5B

NOTES:
Leads are gold-plated kovar
Seven leads thru leads No. 4 connected
to case
15 mil kovar header
Package weight is 1.22 grams

5L

NOTES: Leads are gold-plated kovar Eight leads thru 15 mil kovar header Package weight is 1.22 grams

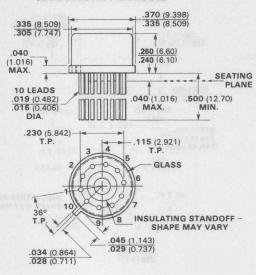
5M

NOTES: Leads are solder dipped to seating plane Eight leads thru 15 mil kovar header Package weight is 1.22 grams

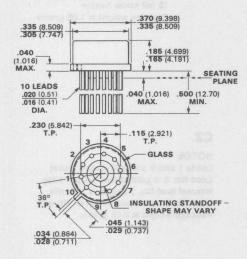
58

NOTES: Leads are solder dipped to seating plane Seven leads thru, leads No. 4 connected to case 15 mil kovar header Package weight is 1.22 grams

JEDEC TO-100 OUTLINE



JEDEC TO-100 OUTLINE



5E

NOTES: Leads are gold-plated kovar Ten leads thru 15 mil kovar header Package weight is 1.32 grams

5F

NOTES: Leads are gold-plated kovar Nine leads through, lead 5 connected to case 15 mil kovar header Package weight is 1.32

51

NOTES:
Leads are solder dipped to the seating plane
Ten leads thru
High RTH package
15 mil kovar header
Package weight is 1.32 grams

5N

Leads are solder-dipped to the seating plane Nine leads through, lead 5 connected to case

15 mil kovar header Package weight is 1.32 grams

5Q

NOTES: Leads are solder dipped to the seating plane Ten leads thru 15 mil kovar header Package weight is 1.32 grams

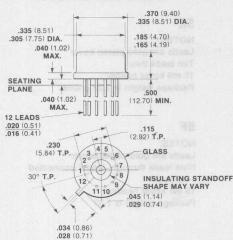
5U

NOTES: Leads are gold-plated kovar Ten leads through High RTH package 15 mil kovar header Package weight is 1.32 grams

All dimensions in inches (bold) and millimeters (parentheses)

14

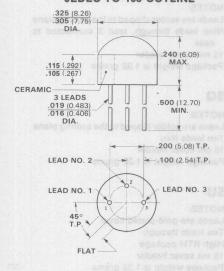
JEDEC TO-101 OUTLINE



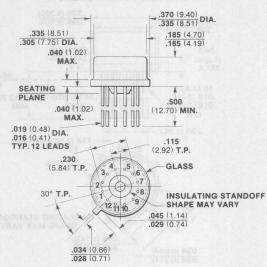
5D

NOTES: Leads are solder dipped to the seating plane Twelve leads through 15 mil kovar header Package weight is 1.4 grams

JEDEC TO-105 OUTLINE



JEDEC TO-101 OUTLINE



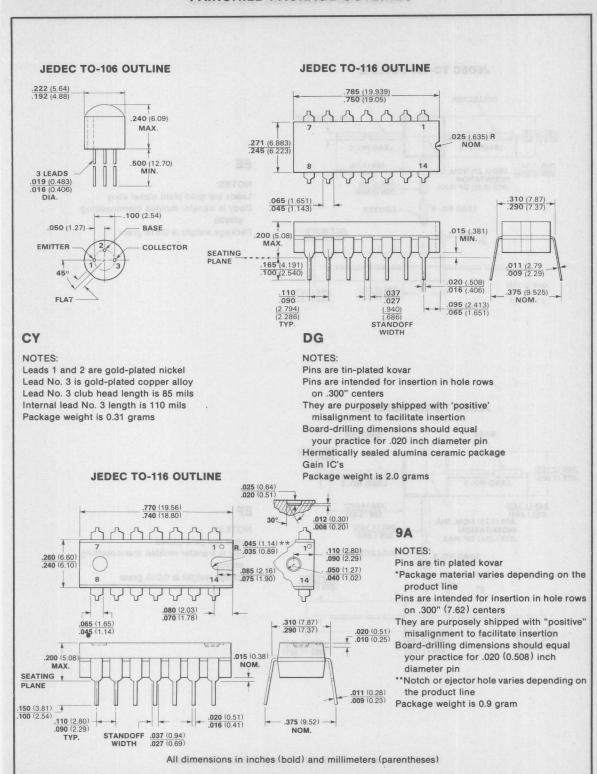
5G

NOTES: Leads are gold-plated kovar Twelve leads thru 15 mil kovar header Package weight is 1.08 grams

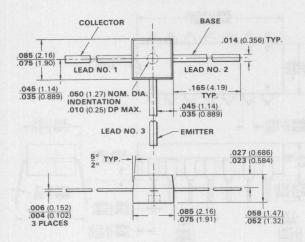
CZ

NOTES:

Leads 1 and 2 are gold-plated nickel Lead No. 3 is gold-plated copper alloy Internal lead No. 3 length is 110 mils Lead No. 3 club head length is 180 mils Package weight is 0.66 grams



JEDEC TO-120 OUTLINE

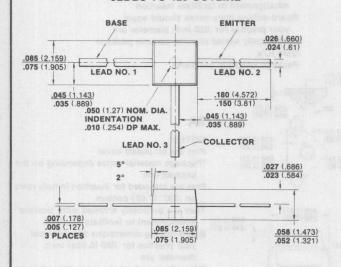


EE

NOTES:

Leads are gold-platd nickel alloy Body is transfer molded thermosetting plastic Package weight is 0.015 gram

JEDEC TO-120 OUTLINE

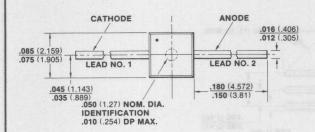


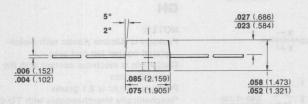
EF

NOTES:

Leads are gold-plated Body is transfer molded thermosetting plastic Package weight is 0.015 gram

JEDEC TO-120 OUTLINE

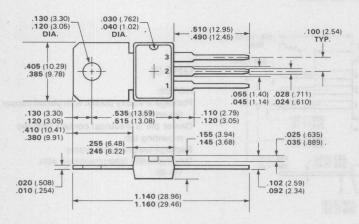




EK

NOTES: Leads are nickel-plated copper alloy Package material is plastic Package weight is 0.015 gram

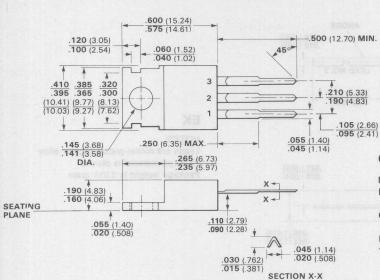
JEDEC TO-202 OUTLINE DYNAWATT



NT

NOTES:
Pin out
Emitter - 1
Base - 2
Collector - 3/4
Assembled weight 0.7 grams
Tab and leads - tin plated copper
Plastic - epoxy

JEDEC TO-220 OUTLINE*

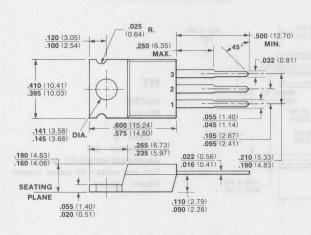


GH

NOTES:

Package is silicone plastic with nickelplated copper tab and pins Center pin is electrical contact with the mounting tab Package weight is 2.1 grams *Mechanically interchangable with TO-66

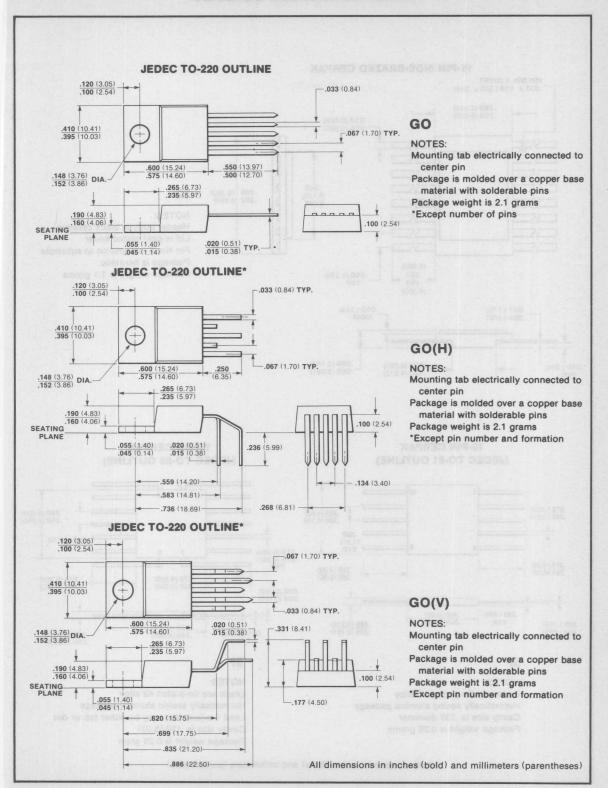
JEDEC TO-220 OUTLINE*



GH(-3)

NOTES:

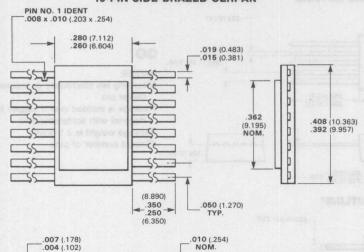
Package is epoxy plastic with plated copper tab and pins Center pin is electrical contact with the mounting tab Package weight is 2.1 grams *Mechanically interchangable with TO-66



14

16-PIN SIDE-BRAZED CERPAK

.085 (2.159) .065 (1.651)



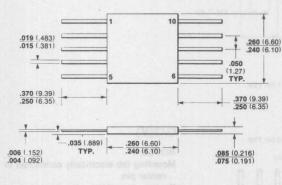
200 (5.080)

180 (4.572)

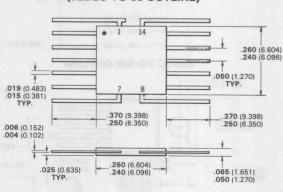
3D

NOTES:
Header body is black ceramic
Lid is gold plated kovar
Pin No. 9 is common to substrate
Package is hermetic
Package weight is 1.1 grams

10-PIN CERPAK (JECEC TO-91 OUTLINE)



14-PIN CERPAK (JEDEC TO-86 OUTLINE)



3F

.010 (.254)

BAIN

NOTES:

Leads are tin plated 42 alloy Hermetically sealed alumina package Cavity size is .130 diameter Package weight is 0.26 grams

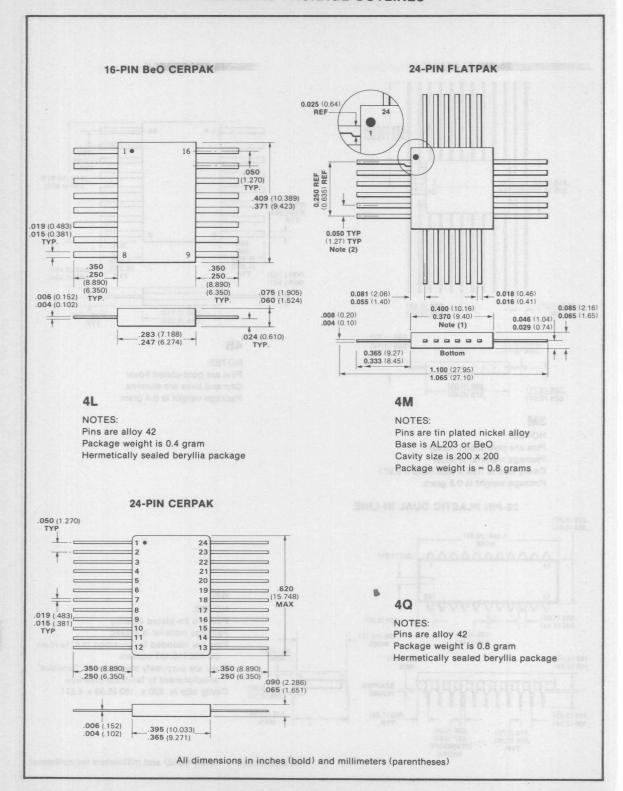
31

NOTES:

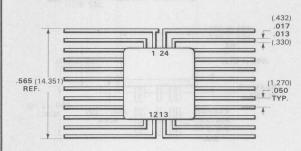
Leads are tin-plated 42 alloy
Hermetically sealed alumina package
Lead 1 orientation may be either tab or dot
Cavity size is .130 (3.30)
Package weight is 0.26 gram

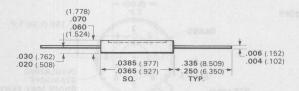
14

16-PIN CERPAK 24-PIN FLATPAK .475 (12.06) .425 (10.80) 1 . 16 050 1.270) TYP. .410 (10.414). .370 (9.398) .255 (6.48) 24 .019 (.482) C TYP. 9 350 .350 250 .250 (8.890) (6.350) TYP. (8.890) (6.350) TYP. .085 (2.159) .006 (.152) .004 (.101) .060 (1.524) .050 (1.27) .280 (7.112) .245 (6.223) .038 (.975) TYP. TYP. .064 (1.62) .005 (0.13) **4B** NOTES: Pins are gold-plated kovar Cap and base are alumina .028 (0.71) .370 (9.40) Package weight is 0.4 gram 3M NOTES: Pins are gold-plated kovar Package material is kovar Cavity size is .120 x .235 (3.05 x 5.97) Package weight is 0.8 gram 22-PIN PLASTIC DUAL IN-LINE .365 (9.27) .355 (9.01) 1.180 (29.97) NOM. .065 (1.65) 4K AAAAA NOTES: .065 (1.65) .130 (3.30) Pins are tin-plated 42 alloy .045 (1 14) Package material is plastic 020 (0.51) .400 (10.16) .016 (0.41) Pins are intended for insertion in hole rows NOM. .02 (.508) .165 (4.19) .155 (3.94) on 400 (10.16) centers .020 (0.51) MIN. MIN. They are purposely shipped with "positive" misalignment to facilitate insertion SEATING .011 (0.28) .009 (0.23) Cavity size is .220 x .180 (5.59 x 4.57) PLANE .135 (3.43) .515 (13.08) .065 (1.65) .100 (2.54) MAX. .037 (0.94) .110 (2.79) .090 (2.29) STANDOFF All dimensions in inches (bold) and millimeters (parentheses)



24-PIN FLATPAK



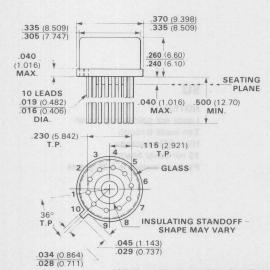


4R

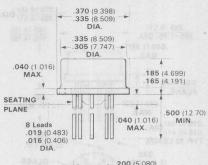
NOTES: Metal cap and base Pins are gold plated kovar

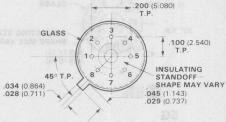
Package weight is 0.6 gram

(JEDEC TO-100 OUTLINE)



(JEDEC TO-99 OUTLINE)





5B

NOTES:
Leads are gold-plated kovar
Seven leads thru leads No. 4 connected
to case
15 mil kovar header
Package weight is 1.22 grams

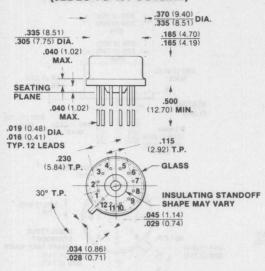
5E

NOTES: Leads are gold-plated kovar Ten leads thru 15 mil kovar header Package weight is 1.32 grams

5F

NOTES: Leads are gold-plated kovar Nine leads through, lead 5 connected to case 15 mil kovar header Package weight is 1.32

(JEDEC TO-101 OUTLINE)

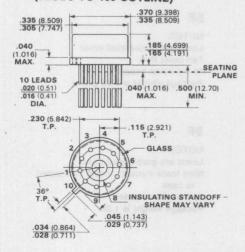


5G

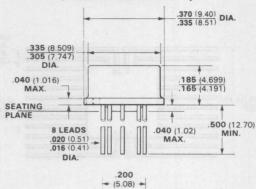
NOTES:

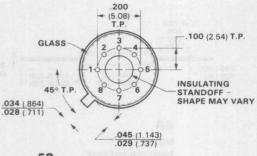
Leads are gold-plated kovar Twelve leads thru 15 mil kovar header Package weight is 1.08 grams

(JECEC TO-100 OUTLINE)



(JEDEC TO-99 OUTLINE)





58

NOTES:

Leads are solder dipped to seating plane Seven leads thru, leads No. 4 connected to case 15 mil kovar header

Package weight is 1.22 grams.

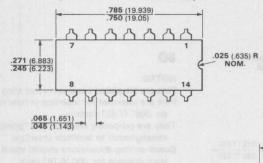
5U

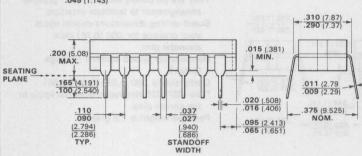
NOTES

Leads are gold-plated kovar Ten leads through High RTH package 15 mil kovar header Package weight is 1.32 grams

14

14-PIN HERMETIC DUAL IN-LINE (JEDEC TO-116 OUTLINE)





6A

NOTES:

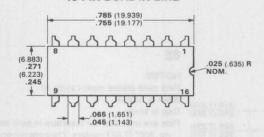
Pins are intended for insertion in hole rows on .300" (7.620) centers

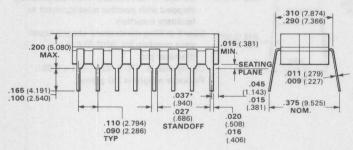
They are purposely shipped with "positive" misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .020" (0.508) diameter pin Pins are alloy 42

Package weight is 2.0 grams

16-PIN DUAL IN-LINE





6B

NOTES:

Pins are tin-plated 42 alloy Pins are intended for insertion in hole rows on .300" centers (7.62)

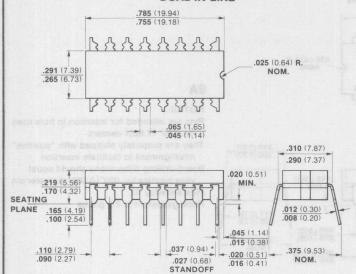
They are purposely shipped with "positive" misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .020 inch diameter pin (0.51)

Hermetically sealed alumina package Cavity size is .110 x .140 (2.79 x 3.56) Package weight is 2.0 grams

*The .037-.027 dimension dies not apply to the corner pins

16-PIN VITREOUS GLASS DUAL IN-LINE



6D

NOTES:

Pins are tin-plated kovar or nickel alloy 42 Pins are intended for insertion in hole rows on .300" (7.62) centers.

They are purposely shipped with "positive" misalignment to facilitate insertion.

Board-drilling dimensions should equal your practice for .030 (0.76) inch diameter pins.

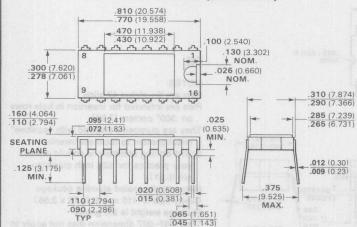
Hermetically sealed alumina package (black).

Cavity size is .130 x .230 (3.30 x 5.84)

*The .037-.027 dimension does not apply to the corner pins.

Package weight is 2.2 grams.

16-PIN DUAL IN-LINE (METAL CAP)



6E

NOTES:

Pins gold-plated nickel alloy 42. Base is AL203

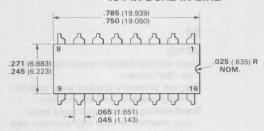
Cap is kovar

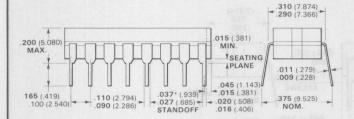
Pins are intended for insertion in hole rows on .300" (7.62) centers. They are purposly shipped with positive misalignment to facilitate insertion.

Board-drilling dimensions should equal your practice for .020" (0.51) diameter pin.

Cavity size is .175 \times .220 (4.44 \times 5.59). Package weight is 2.0 grams.

16-PIN DUAL IN-LINE





6F

NOTES:

Pins are tin-plated kovar or nickel alloy 42 Pins are intended for insertion in hole rows on .300" centers (7.62)

They are purposely shipped with "positive" misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .030 inch diameter pins (0.76)

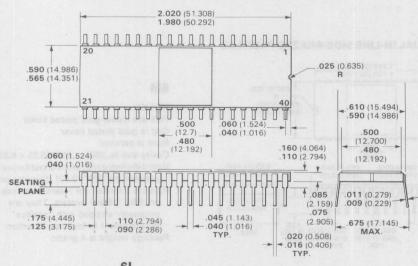
Hermetically sealed alumina package (black)

Cavity size is .110 x .140 (2.79 x 3.56)

*The .037-.027 dimension does not apply to the corner pins

Package weight is 2.0 grams

40-PIN DUAL IN-LINE SIDE-BRAZED DUAL IN-LINE



61

NOTES:

Pin material nickel gold-plated kovar

Cap is kovar

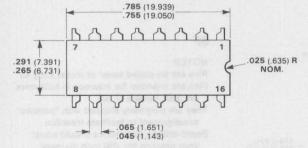
Base is ceramic

Package weight is 6.5 grams

All dimensions in inches (bold) and millimeters (parentheses)

14

16-PIN DUAL IN-LINE

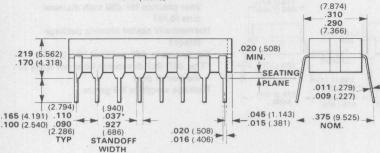


61

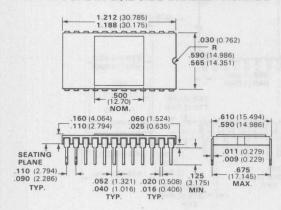
NOTES:

Leads are intended for insertion in hole rows on .300" centers They are purposely shipped with "positive"

misalignment to facilitate insertion Board-drilling dimensions should equal your practice for .020 inch diameter lead Lead No. 4 is internally grounded



24-PIN DUAL IN-LINE SIDE-BRAZED PACKAGE



6M

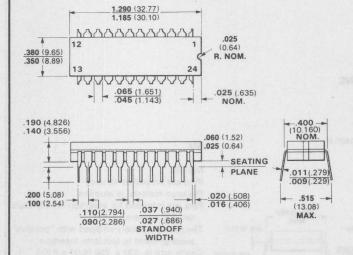
NOTES:
Pins are nickel-gold plated kovar
Cap is gold plated kovar
Base is ceramic
Cavity size is .250" x .250" (6.35 x 6.35)
Board drilling dimensions should equal your practice for .020" (0.50) diameter pin
Pins are intended for insertion in hole rows on .600" (15.24) centers. They are purposely shipped with "positive" misalignment to facilitate insertion
Package weight is 4 grams

24-PIN DUAL IN-LINE 1.290 (32.766) 1.235 (31.369) .030 (0.762) R .570 (14.478) .515 (13.081) 13 14 15 16 17 18 1920 2122 23 24 .065 (1.651) .100 (2.540) .045 (1.143) .040 (1.016) .600 (15.240) .190 (4.826) NOM .140 (3.556) .063 (1.544) .025 (0.613) SEATING PLANE .011 (0.279) .009 (0.229) .037 (0.940) .020 (0.508) .750 (19.050) .200 (5.080) .027 (0.686) .016 (0.406) MAX .100 (2.540) STANDOFF .110 (2.794) WIDTH .090 (2.286) TYP.

6N

NOTES:
Pins are tin-plated 42 alloy
Package material is alumina
Pins are intended for insertion in hole rows
on .600 (15.24) centers
They are purposely shipped with "positive"
misalignment to facilitate insertion
Cavity size is .230 x .230 (5.84 x 5.84)
Package weight is 6.5 grams

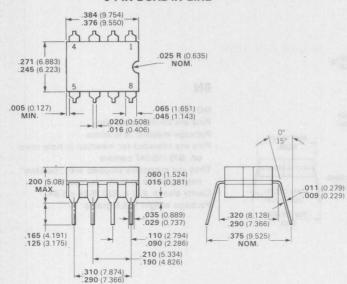
24-PIN DUAL IN-LINE



6Q

NOTES:
Pins are tin-plated 42 alloy
Package material is alumina
Pins are intended for insertion in hole rows
on .400 (10.16) centers
They are purposely shipped with "positive"
misalignment to facilitate insertion.
Cavity size is .195 x .195 (4.95 x 4.95)
Package weight is 6.0 grams

8-PIN DUAL IN-LINE

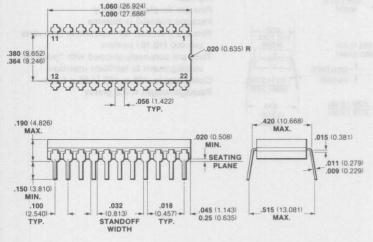


6T

NOTES:

Pins are tin-plated kovar
Pins are intended for insertion in hole rows
on .300" centers
They are purposely shipped with "positive"
misalignment to facilitate insertion
Board-drilling dimensions should equal
your practice for .020 inch diameter pin
Hermetically sealed alumina package
Cavity size is .110 x .140
Package weight is 1.0 grams

22-PIN CERAMIC DUAL IN-LINE



6V

NOTES:

Pins are tin-plated 42 alloy
Package material is alumina
Pins are intended for insertion in hole rows
on .400 centers
They are purposely shipped with "positive"
misalignment to facilitate insertion
Cavity size is .200 x .250 (5.08 x 6.35)
Package weight is 6.0 grams

6Z

NOTES:

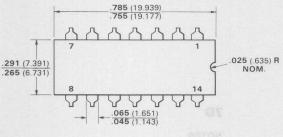
Pins are tin-plated kovar
Pins are intended for insertion in hole rows
on .300" centers

They are purposely shipped with "positive" misalignment to facilitate insertion Board-drilling dimensions should equal

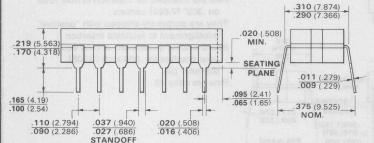
your practice for .020 inch diameter pin Hermetically sealed alumina package Cavity size is .160 x .250

*The .034-.030 dimension does not apply to the corner pins

Package weight is 2.2 grams



WIDTH



7A

NOTES:

Pins are tin-plated 42 alloy

Pins are intended for insertion in hole rows on .300" (7.62) centers.

They are purposely shipped with "positive" misalignment to facilitate insertion.

Board-drilling dimensions should equal your practice for a conventional .020" (0.51) diameter pin.

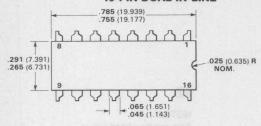
Hermetically sealed alumina package. Cavity size is .130 x .250 (3.30 x 6.35) *Similar to JEDEC TO-116 except for package width.

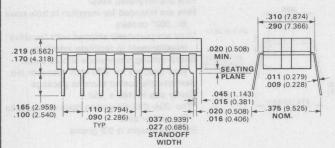
Package weight is 2.2 grams.

All dimensions in inches (bold) and millimeters (parentheses)

14

16-PIN DUAL IN-LINE





7B

NOTES:

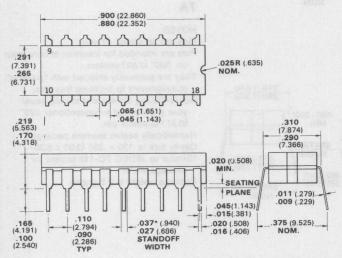
Pins are tin-plated 42 alloy
Pins are intended for insertion in hole rows
on .300" (7.62) centers.
They are purposely shipped with "positive"
misalignment to facilitate insertion
Board-drilling dimensions should equal

Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin

Hermetically sealed alumina package
Cavity size is .130 x .230

*The .037-.027 (0.94-0.69) dimension does
not apply to the corner pins
Package weight is 2.2 grams

18-PIN CERAMIC DUAL IN-LINE



7D

NOTES:

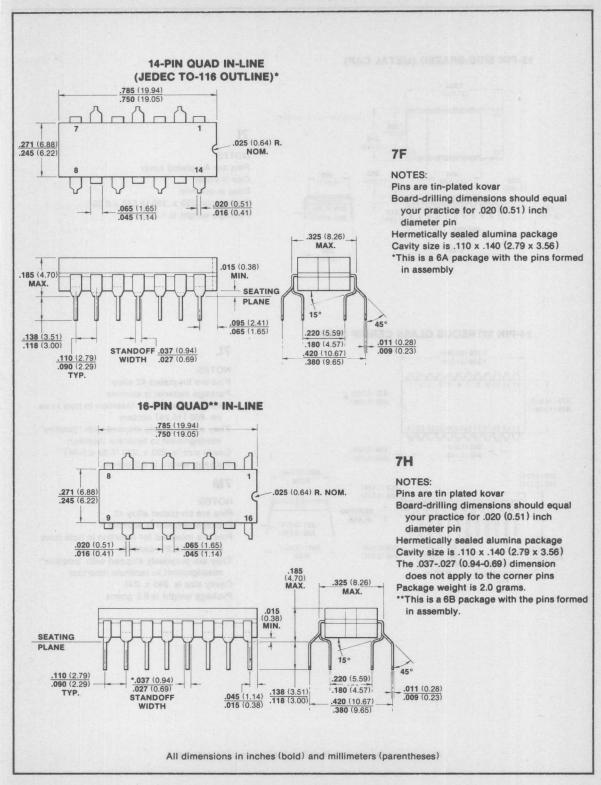
Pins are intended for insertion in hole rows on .300" (7.620) centers They are purposely shipped with "positive"

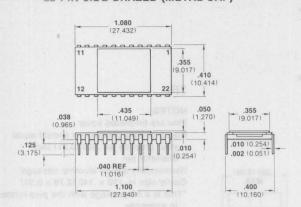
misalignment to facilitate insertion

Board-drilling dimensions should equal

your practice for .020 inch (0.508) diameter pin

Pins are alloy 42

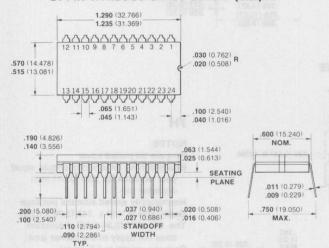




71

NOTES: Pins are Au-plated kovar Cap is kovar Base is ceramic Cavity size .220 x .250 (5.588 x 6.35) Package weight is 4.0 grams

24-PIN VITREOUS GLASS CERDIP (MSI)



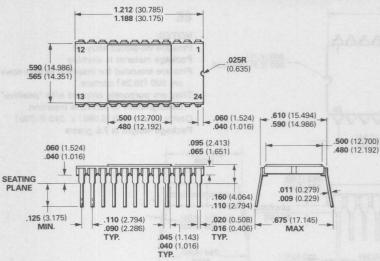
7L

NOTES:
Pins are tin-plated 42 alloy
Package material is alumina
Pins are intended for insertion in hole rows
on .600 (15.24) centers
They are purposely shipped with "positive"
misalignment to facilitate insertion
Cavity size is .230 x .230 (5.84 x 5.84)
Package weight is 6.5 grams

7M

NOTES:
Pins are tin-plated alloy 42
Package material is alumina
Pins are intended for insertion in hole rows
on .600 (15.24) centers
They are purposely shipped with "positive"
misalignment to facilitate insertion
Cavity size is .245 x .245
Package weight is 6.5 grams

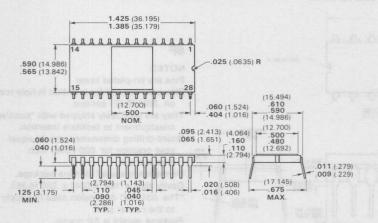
24-PIN SIDE-BRAZED PACKAGE DUAL IN-LINE



7R

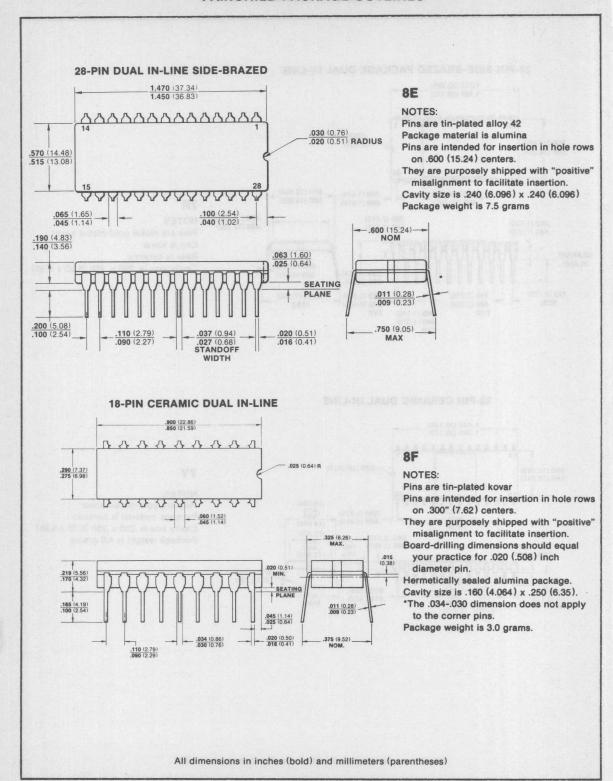
NOTES:
Pins are nickel gold-plated kovar
Cap is kovar
Base is ceramic
Cavity size is .250 x .250 (6.35 x 6.35)

28-PIN CERAMIC DUAL IN-LINE



7Y

NOTES: Pins are gold-plated kovar Package material is ceramic Cavity size is .250 x .250 (6.35 x 6.35) Package weight is 4.0 grams



290 (7.87)

375 (9.53

.015 (0.38) MIN.

.020 (0.51)

SEATING

81 NO

NOTES:

Pins are tin-plated 42 alloy

Pins are intended for insertion in hole rows on .300" (7.62) centers.

They are purposely shipped with "positive" misalignment to facilitate insertion.

Board-drilling dimensions should equal your practice of .020 (0.51) inch diameter pin.

Hermetically sealed alumina package.

*This dimension does not apply to the corner pin

Package weight is 2.0 grams.

40 500 50 4050 50141 151 1505

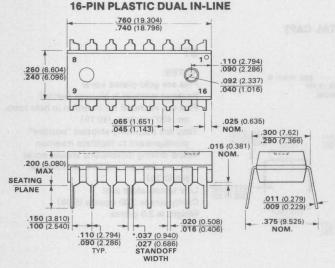
16-PIN CERAMIC DUAL IN-LINE

77777

.271 (6.88)

.200 (5.08) MAX.

.165 (4.19)



8K

NOTES:

Pins are tin-plated kovar or alloy 42 nickel *Package material varies depending on the product line

Pins are intended for insertion in hole rows on .300" (7.62) centers

They are purposely shipped with "positive" misalignment to facilitate insertion

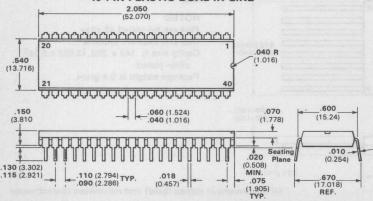
Board-drilling dimensions should equal your practice for .020" (0.51) diameter pin

***The .037-.027 (0.94-0.69) dimension does not apply to the corner leads

**Notch or ejector hole varies depending on the product line

Package weight is 0.9 gram

40-PIN PLASTIC DUAL IN-LINE



8P

NOTES:

Pins are tin-platd kovar

Package material is plastic

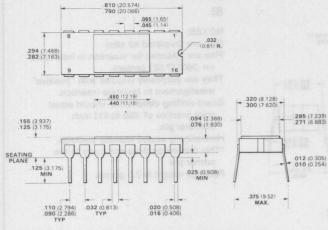
Pins are intended for insertion in hole rows on .600 centers

They are purposely shipped with positive misalignment to facilitate insertion.

Weight: 7 grams

All dimensions in inches (bold) and millimeters (parentheses)

16-PIN DUAL IN-LINE (METAL CAP)



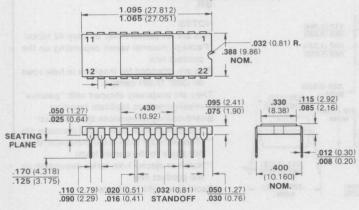
8F

NOTES:

Pins gold-plated kovar
Base is AL203, dark ceramic
Cap is kovar
Pins are intended for insertion in hole rows
on .300" centers. They are purposely
(7.62) shipped with positive misalignment
to facilitate insertion

Board-drilling dimensions should equal your practice for .020" diameter pin (5.08) Cavity size is .175 x .240 (4.44 x 6.10)

22-PIN DUAL IN-LINE (METAL CAP)

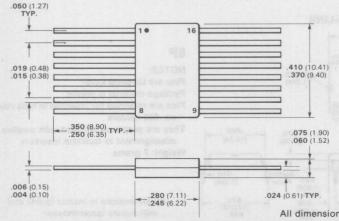


8T

NOTES:

Pins are gold-plated kovar
Package material is alumina (white)
Pins are intended for insertion in hole rows
on .400" centers. (10.16)
They are purposely shipped "positive"
misalignment to facilitate insertion
Board-drilling dimensions should equal
your practice for .030 inch diameter
pin (0.76)
Low temperature seal
Cavity size is .200 square (5.08)
Weight is 2.0 grams.

16-PIN CERPAK

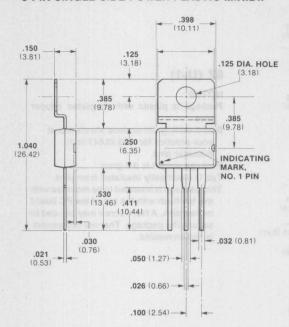


8U

NOTES:

Pins are tin-plated 42 alloy Cap and base are alumina Cavity size is .140 x .200, (3.556 x 5.08) silver plated Package weight is 0.4 gram

3-PIN SINGLE SIDE POWER PLASTIC MINIDIP

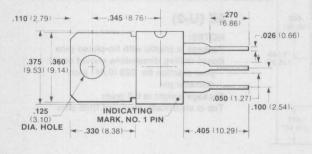


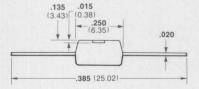
8Y (U-1)

NOTES:
Pins are tin plated copper
Package weight is 0.6 gram
Package material is plastic
Tab is electrically insulated from pins
This package is intended to be mounted with
the tab flush with the top of the P.C. board
or heat sink. A No. 4 screw may be used to
secure the package. Thermal compound
is recommended.

All dimensions nominal.

3-PIN SINGLE SIDE POWER PLASTIC MINIDIP





8Y (U-2)

NOTES:

Package is plastic with tin-plated copper leads

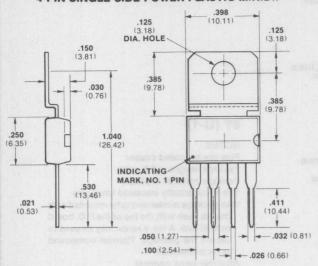
Package weight is 0.6 gram Center lead is electrical contact with

mounting tab

For detailed package configuration, refer
to FSB-90717

All dimensions in inches (bold) and millimeters (parentheses)

4-PIN SINGLE SIDE POWER PLASTIC MINIDIP



8Z (U-1)

NOTES:

Package is plastic with tin-plated copper pins

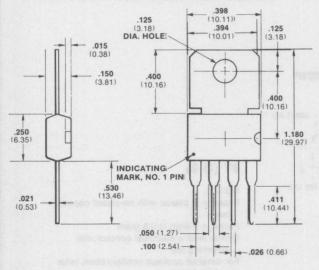
Board-drilling dimensions should equal your practice for .033 (0.84) inch diameter pins

Package weight is 0.6 gram

Tab is electrically insulated from pins

This package is intended to be mounted with the tab flush with the top of the PC board or heat sink. A No. 4 screw may be used to secure the package. Thermal compound is recommended.

4-PIN SINGLE SIDE POWER PLASTIC MINIDIP

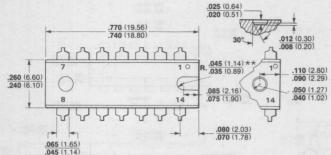


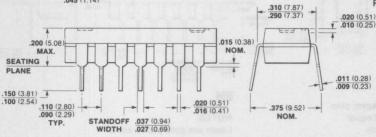
8Z (U-2)

NOTES:

Package is plastic with tin-plated pins Board-drilling dimensions should equal your practice for .033 (0.84) inch diameter pin Package weight is 0.6 gram Tab is electrically insulated from pins

14-PIN *PLASTIC DUAL IN-LINE (JEDEC TO-116 OUTLINE)





9A

NOTES:

Pins are tin plated kovar

*Package material varies depending on the product line

Pins are intended for insertion in hole rows on .300" (7.62) centers

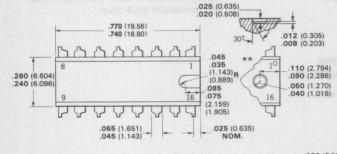
They are purposely shipped with "positive" misalignment to facilitate insertion

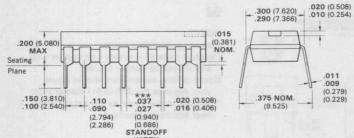
Board-drilling dimensions should equal your practice for .020 (0.508) inch diameter pin

**Notch or ejector hole varies depending on the product line

Package weight is 0.9 gram

16-PIN PLASTIC* DUAL IN-LINE





9B

NOTES:

Pins are tin-plated kovar or alloy 42 nickel. Pins are intended for insertion in hote rows on .300" (7.62) centers

Leads purposely have a "positive" misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .020 inch (0.51) diameter pin.

Package weight is 0.9 gram

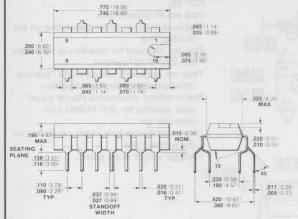
*Package material varies depending on the product line

***The .037-.027 (0.94-0.69) dimension does not apply to the corner pins

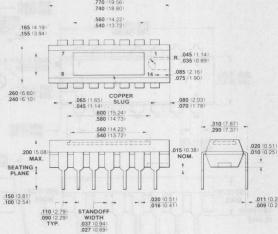
**Notch or ejector hole varies depending on the product line

All dimensions in inches (bold) and millimeters (parentheses)

14-PIN PLASTIC QUAD IN-LINE (JEDEC TO-116 OUTLINE*)



14-PIN PLASTIC DUAL IN-LINE (WITH COPPER SLUG)



9C

NOTES:

Package is epoxy with tin-plated kovar pins Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin

Package weight is 0.9 gram

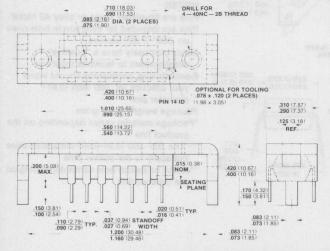
*This is a 9A package with the pins formed in assembly. Only the notched and epoxy version is used

9H

NOTES:

Leads are gold-plated kovar
Board-drilling dimensions should equal
your practice for .020 (0.51) inch
diameter lead
Package material is epoxy with copper slug
Package weight is 0.9 gram

14-PIN PLASTIC DUAL IN-LINE (COPPER SLUG AND HEAT BRACKET)*



9J

NOTES:

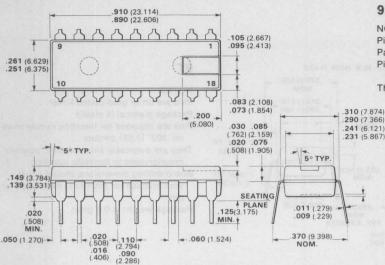
Pins are gold-plated kovar

Package material is epoxy with copper slug
and tin-plated copper bracket

Board-drilling dimensions should equal
your practice for .020 (0.51) diameter pin

*Package is the same as 9H except that a
heat bracket is attached

18-PIN PLASTIC DUAL IN-LINE



9M

NOTES:

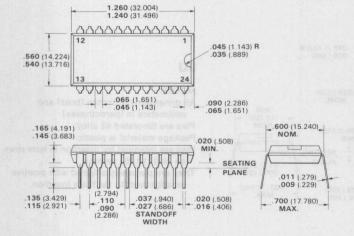
Pins are tin-plated kovar

Package material is plastic

Pins are intended for insertion in hole rows on .300 (7.62) centers

They are purposely shipped with "positive" misalignment to facilitate insertion

24-PIN PLASTIC DUAL IN-LINE



9N

NOTES:

All dimensions in inches (bold) and millimeters (parentheses)

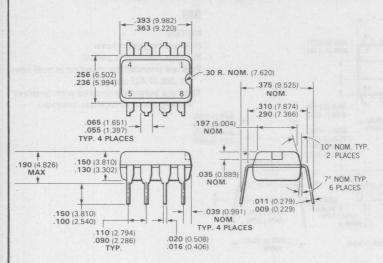
Pins are tin-plated kovar

Package material is plastic

Pins are intended for insertion in hole rows on .600 (15.24)

They are purposely shipped with positive misalignment to facilitate insertion

8-PIN PLASTIC DUAL IN-LINE



9T

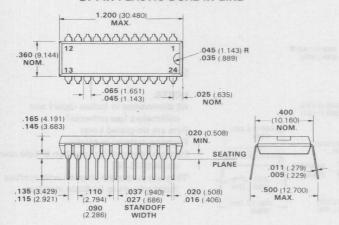
NOTES:

Pins are tin or gold-plated kovar
Package material is plastic
Pins are intended for insertion in hole rows
on .300" (7.62) centers
They are purposely shipped with "positive"
misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin

Package weight is 0.6 gram

24-PIN PLASTIC DUAL IN-LINE

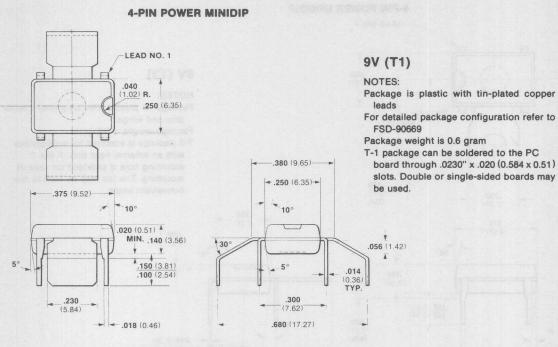


9U

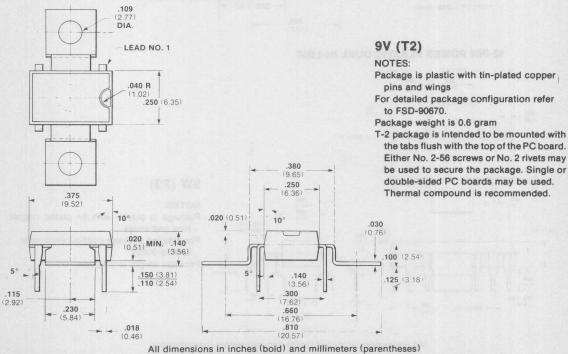
NOTES:

All dimensions in inches (bold) and millimeters in (parentheses)
Pins are tin-plated 42 alloy
Package material is plastic
Pins are intended for insertion in hole rows on .400 (10.16) centers.
They are purposely shipped with positive misalignment to facilitate insertion.

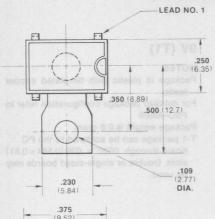
14



4-PIN POWER MINIDIP



4-FIEABCHILINBACKAGE OUTLINES



9V (T3)

NOTES:

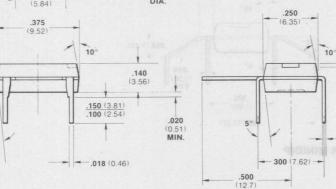
.020

-.014 (0.36)

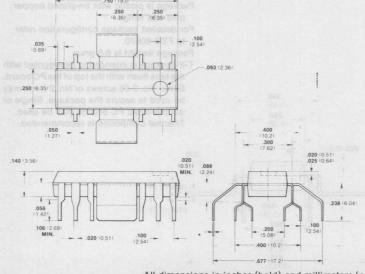
Package is plastic with tin-plated copper pins and wings

Package weight is 0.6 gram

T-3 package is intended for applications with an external heat sink. A No. 2 mounting hole is provided for case of mounting. The tab may be bent to any convenient angle.



12-PIN POWER PLASTIC DUAL IN-LINE



9W (P3)

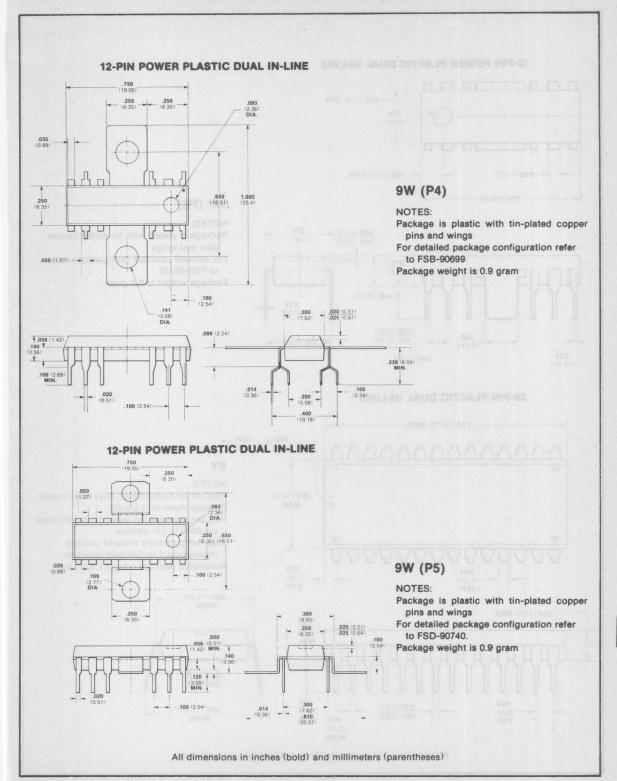
NOTES

Package is plastic with tin plated copper pins and wings

For detailed package configuration refer to FSB-90698

Package weight is 0.9 gram

All dimensions in inches (bold) and millimeters (parentheses)



12-PIN POWER PLASTIC DUAL IN-LINE -.093 (2.36) DIA .250 (6.35) -.050 (1.27) -.100 (2.54) TYP. .750 (19.05) 9W (P6) NOTES: .020 (0.51) Package is plastic with tin plated copper pins and wings For detailed package configuration refer .015 to FSB-90126 Package weight is 0.9 gram T.140 (3.56) .014 (0.36) .135 (3.43) 150 .125 (3.18) **← .300** (7.62) → (3.81) .020 (10.51) .100 (2.54) 28-PIN PLASTIC DUAL IN-LINE 1.50 (38.10) MAX. .050 R. x .030 DP. 94 NOTES: Pins are tin-plated kovar, alloy 42 or copper .555 (14.10) MAX. Package material is plastic Pins are intended for insertion in hole rows on .600 (15.24) centers They are purposely shipped positive misalignment to facilitate insertion Assembled package weight 4.8 grams .050 (1.27) TYP. .075 (1.91) TYP. .600 (15.24) NOM. .200 (5.08) MAX. .020

All dimensions in inches (bold) and millimeters (parentheses)

MIN.

.115

(2.92)

MIN.

.018

(0.46) NOM.

.027 (0.68)

100

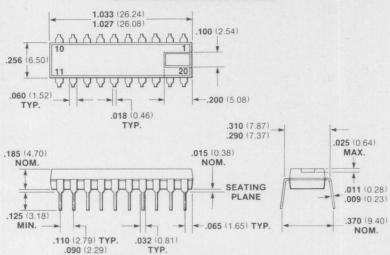
2.54

.011 (0.28)

.625 (15.88)

NOM.

20-PIN PLASTIC DUAL IN-LINE



9Z

NOTES:

Pins are tin plated alloy 42 or copper (olin 195)

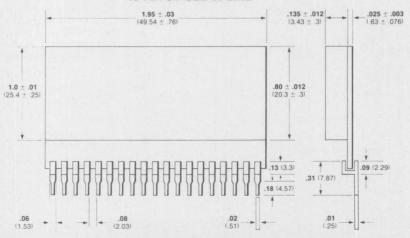
Package material varies depending on the product line

Pins are intended for insertion in hole rows on .300 (7.62) centers

They are purposely shipped with "positive" misalignment to facilitate insertion

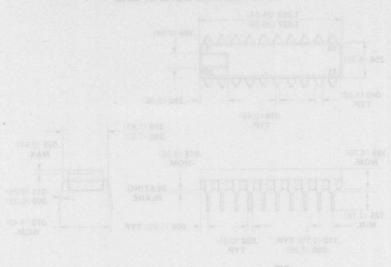
Board drilling dimensions should equal your practice for .020" (0.51) diameter pin Package weight is a little over 1.0 grams

19-PIN SINGLE IN-LINE



All dimensions in inches (bold) and millimeters (parentheses)

SINGLESS SAUG DITEAUS MISSES



76

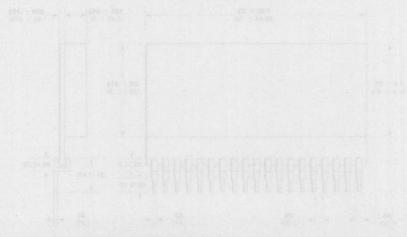
the state the plated alloy 42 or copper folio

Publisge meterial varies depending on the product line

his are intended for insertion in hole rower on 300 (53.1) centers

Perform to further than the positive management of an interest installed and the management of an interest of the management of the practice for .020" (0.51) diameter pin and the management of the management of

SHILL BE SLIGHTE SERVE



tassortmensions in inches body and millimaters barrenthesast